

COAL AGE

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No. 8

Recompensing Loyalty

A Plea for the "Old Guard"

WANTED—By mine manager of 35 years' experience with big coal company, work of some kind or in a consulting capacity. Will accept small salary.

Address E-35, Care Herald.

THERE is a touch of pathos in every such want-ad as the above. Instantly the imagination forms the picture of a man who has spent the best years of life with one firm and now must look for employment with another.

The coal-mining industry particularly is full of instances of lifelong service and devotion to one company. Men, as they continue to work for one concern, unconsciously grow loyal to it. Hundreds of such men have passed up opportunities to go into other lines of business.

There is no finer thing that can exist between management and men than a common spirit of loyalty—a condition that marks a corporation as not existing solely to make money.

Every day these faithful servants of coal-mining are winding up their careers. What is the industry doing for them? Are any of these men turned out unfairly? Is *your* concern as much interested in the last years of its faithful workers as in the years of their

prime? Have *you* an old-age pension plan? Is it free from technicalities that restrict its benefits to a very few?

EVERY company has its "Old Guard"—men grown gray in service. The experience and counsel of these men often justify the wages they receive. Where there is no reward for lifelong loyalty, besides mere pay, one of the finest things in business life has been crushed.

Too often a faithful life is shortened by discarding an old but loyal employee for a youthful, untried product. True! the working force must be kept virile; youth must be served, but we must not forget that good counsel bears a high price.

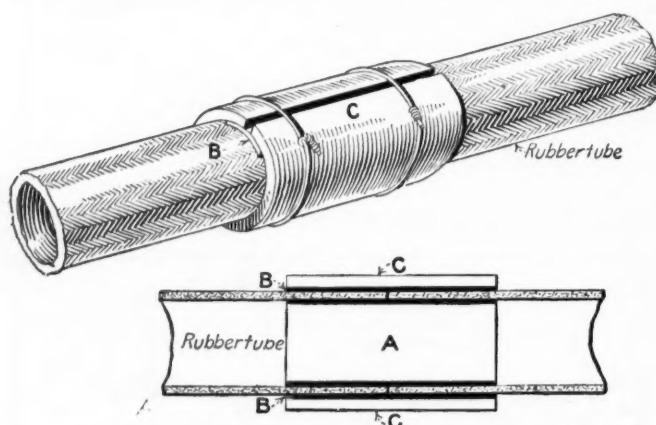
The big problem of industrial management is to create loyalty—nothing sickens and kills it quicker than the lack of adequate reward. Youth is desirable, but the advice of age and experience is often the best weapon of young men.

Let us deal fairly with the "Old Guard."

Ideas and Suggestions

To Mend a Broken Rubber Hose

The accompanying illustration shows a simple method of repairing a rubber hose that has been broken. This repair is effected as follows: A short piece of pipe *A* is inserted in the broken ends of the hose. A second piece of pipe *C*, slightly larger than the outside diameter of the hose, is split longitudinally into two halves.



HOW TO REPAIR A BROKEN RUBBER HOSE

A curved piece of thin sheet metal, bent to the diameter of the hose, is then placed beneath the open space between the two halves of the larger pipe, as may be clearly seen in the illustration. Two wire bands or other fastenings are then placed upon either end of the split pipe and drawn up snug.

This emergency repair, which is quite effective if properly made, may be easily and quickly executed, the material therefor being almost always at hand around the mine or coke plant.

Proper Tension for Steel Tapes

BY ALFRED K. FRIEDRICH
Carmichaels, Penn.

Everyone knows correct measurement of distance is just as important as correct bearing, but far less care is usually employed than in measuring angles.

Most tapes when they come from the factory are correct at a 15-lb. pull when supported their entire length. Now, this condition is almost never met with in the field. The proper tension when unsupported is what the engineer usually desires. I made some tests recently that may be of general interest:

I first laid out 100, 200 and 300 ft. with a standard tape. This was done on a piece of perfectly level ground. Wooden hubs were driven flush with the ground and a scratch made at the graduation points in order to have as fine a mark as possible. I next laid out the tape to be tested (300 ft. in length), and found it correct at a 16-lb. pull. I next tried the tape unsupported. Lifting a 100-ft. section clear of the

ground, I found it correct at 32 lb. In the same manner 200 ft. was correct at 48 lb. From these results I expected the 300-ft. total to require 64 lb., and was rather surprised to find that it only required 56 lb. to pull it up to the mark when entirely unsupported. The tensions were all less than I had expected to find them, as I was using an extra-heavy tape.—*Engineering and Mining Journal*.

Portable Armature Test Set

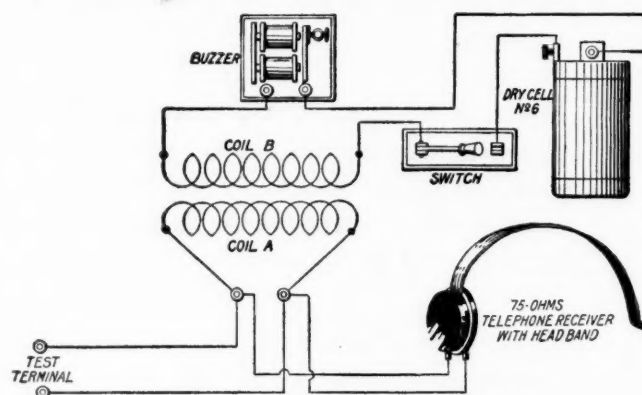
BY FRANK HOSKINSON

Chief Electrician, Victor-American Fuel Co., Delagua, Colo.

The mine electrician frequently has to repair a motor with the armature grounded; that is, one wherein one or more of the armature wires or a commutator bar is burned and making contact with the iron core. This ground has to be removed before the armature will run. The wires must be reinsulated so as not to make contact with the iron core, or in case they are in bad shape or the coil is shorted as well as grounded and cannot be repaired and time is lacking wherein to put in a new coil, the remedy is to cut out the burned or grounded coil and close the open circuit in the commutator.

Armatures that are in use on mine locomotives, mining machines, pumps and other pieces of apparatus in and around the mine may have several coils cut out and still give good service for an indefinite time. It is not always practical or advisable to rewind an armature if the trouble is only due to one or more coils being grounded or short-circuited.

It happens frequently that an armature has a grounded coil which, upon careful examination, does not appear on



CONNECTIONS OF THE PORTABLE TEST SET

the visible parts, but may be revealed by testing with a lamp between the armature shaft and the commutator. If the lamp will light up to its full candlepower, it indicates that the coils are grounded in some part of the armature. In order to find the exact coil that is grounded, the old-time method was to remove all the wires from two or three commutator bars on each side of the commutator, then test with the lamp to determine

if by chance the trouble was in one of the halves. It seldom happens that it is, and the next step is to remove all the wires from other sections of the commutator, continuing this process and testing with the lamp until the exact coil is located.

This method takes considerable time, and generally the band wire next to the commutator has to be removed so that after the coil that is grounded is located and cut out or repaired, all the wires that have been removed from the commutator have to be reinsulated and replaced and resoldered in the commutator and the band wires rewound on the armature. It is seldom that an armature can be thus repaired and made ready for use in less than 5 to 25 hours.

I have a test set that I made several years ago and have used repeatedly, which can be advantageously employed to locate a grounded coil or commutator bar. I have many times had an armature that tested grounded and refused to run, yet on the visible parts showed no trace of the ground. By using the test set, I have quickly located the exact coil that was grounded. After this is done, the wires are removed from the commutator and tests are made with a lamp to see if there are any more coils grounded and to check up the test set. Finding the other coils clear of a ground, the ends of the grounded coil are cut off or put back away from the commutator. The open circuit caused by the removal of the coil is then closed and the armature is ready for use again. I have on several occasions removed grounds from armatures in the manner just described and had the motor back in operation in less than an hour.

A complete description, with diagrams of the test set, is given herein, so that any electrician can easily make one for his own use at a small cost. He will find it an indispensable aid in his daily work, since it is absolutely reliable and in its use the condition of the coils is noted by the amount of sound heard in the head telephone receiver. This test set will reveal the presence of short and open circuits and of grounded coils in any armature.

If the coil is open-circuited, the sound in the receiver is loud; if the coil is short-circuited, the sound is low. The tests for opens and shorts is made by touching the test terminals on adjacent commutator bars. In testing for a ground, one of the test terminals is held on the armature shaft while the other one is touched to each commutator bar, and as the grounded coil is approached, the sound in the receiver diminishes and when the exact commutator bar is touched that has the grounded coil connected to it, there is practically no sound at all in the receiver. On the commutator bars on each side of the grounded one, however, there is a certain amount of sound heard in the receiver. Upon locating the ground, this bar should be marked and the test continued around the commutator until the other side of the coil is located. The wires from the commutator are then removed and the grounded coil repaired.

The diagram shows the connections of the test set. To make coil A, wind enough No. 8 D. C. C. magnet wire on a wooden form $\frac{3}{4}$ in. in diameter to make a single-layer coil 6 in. long. Remove the form and you will have a hollow coil of wire. Form the ends so as to make a support as well as terminals.

To make the coil B, cut enough pieces of No. 18 soft-iron wire to form a core $6\frac{1}{2}$ in. long by $\frac{1}{2}$ in. in diameter. Insulate this core and wind on it two layers of No. 20

or No. 22 D. C. C. magnet wire, leaving about $\frac{1}{4}$ in. of the core on each end without windings. This will bring the two ends of the wire out on the same end of the core. Solder a flexible lead on each of the ends. Coil B is made so as to slide inside of coil A. Mount coil A on a suitable base and put coil B inside of it. Arrange the connections as shown in the diagram on the preceding page.

The battery current flows through the watchcase buzzer and is there converted into an alternating current. The buzzer is in series with the coil B, and the alternating current therein flowing induces a current in coil A. The watchcase telephone receiver is fitted with a head band so as to leave both hands free. The receiver is connected across the terminals of coil A, and the test terminals are connected in parallel with the receiver. The volume of sound in the receiver may be varied by moving the coil B in or out of coil A. The amount of adjustment needed depends on the size and style of armature being tested. One dry cell will operate the set and last for months.

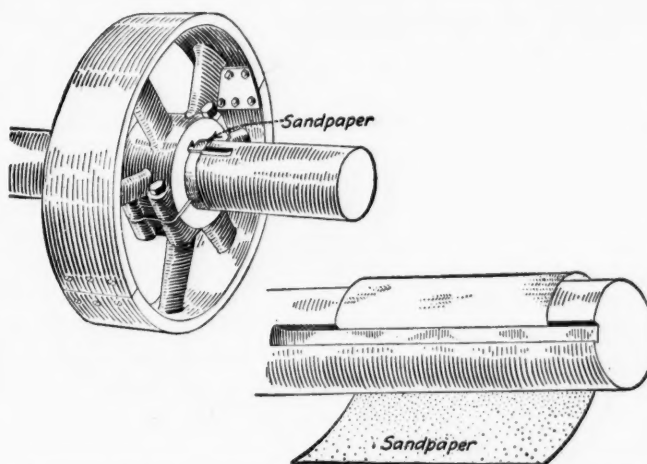
I have my test set arranged so that it is very compact, light and handy. I have a light oak box large enough to hold one dry cell, the receiver with head band and the test cords. The buzzer, switch and terminals are all mounted on the inside of the box cover, which is hinged and is provided with a lock. The outside is fitted with a leather handle for carrying. I have used this test set for a number of years and the idea will be of service to anyone engaged in electrical work.

Sandpaper Replaces Pulley Key

BY H. S. CARPENTER

Billmyer, Penn.

The key on the drive pulley of a crusher sheared off and an immediate repair was necessary. As a temporary expedient, the pulley was unbolted, spread, and a layer of sandpaper was placed between the pulley and



LAYER OF SANDPAPER TAKES PLACE OF STEEL KEY

the shaft. The holding-bolts of the pulley were then drawn up tight and the crusher put into operation.

As a special precaution, the bolts were pulled up as tight as was possible; and though trouble was expected, none developed, the pulley driving the crusher without slipping and giving perfect satisfaction to date.—*Engineering News-Record*.

The Mexican as a Coal Miner

By P. L. MATHEWS

Santo Tomas, Texas

SYNOPSIS—*Although the Mexican suffers when compared to the European races that have been supplying our coal mines with raw labor, the possibility of his proving a valuable adjunct to our labor forces is by no means discouraging. Where the climatic conditions are favorable, and where he can be supervised by men who understand his virtues and his weaknesses, he can undoubtedly be developed in time into an able and efficient coal miner.*



HE unprecedented demands on the industries of the United States occasioned by our entrance into the war will undoubtedly present features which will require a radical departure from many of the time-honored customs that hitherto have been followed in the employment of labor. With the previous ingress of European immigrants entirely stopped, and the ranks of unskilled labor already depleted by the egress of those who have been called to the

colors of their respective countries, the United States now finds itself pinched for industrial workers.

As we assume in increasing proportions our obligation to supply our allies with the munitions of war; with men, food and the vast requirements of their civil population, in addition to our own war necessities, it is evident that the labor shortage will steadily become worse.

The railroads and the manufacturing industries have one recourse. They can imitate the example of the other countries at war and employ women. Some of the large railroads have already started schools for their women employees and are training them to step into the places of telegraphers, station agents and ticket sellers, in anticipation of shifting or replacing the men.

While there are some positions in the surface force of a coal mine that could be filled by women, yet the mining industry cannot replete its ranks of underground workers from the same source. It will be obliged to maintain and increase its output with the labor at present available, and though the United States Government will undoubtedly avoid the mistake made by Great Britain at the beginning of the war—that is, crippling her industries by the enlistment of her miners as soldiers, only to return them to restore the depleted fuel reserves—it is admitted that even with the present supply of labor the coal mines in the United States will be required to make every exertion to meet the demands for fuel.

Although the European immigrant is debarred by the war and the Asiatic by law, there is still one source of labor available, and that is Mexico. Mexican miners

have recently been introduced into the anthracite fields, and the results will be watched with interest. With Mexico in an economic upheaval, owing to the ravages of six years of civil strife, and with about 50 per cent. of her population of 15,000,000 on the verge of actual starvation, there are possibilities of a labor supply from this field which present an inviting appeal, particularly to the mining industry.

Many well-informed and thoughtful men advocate that the United States take immediate steps to establish, if not a military at least a commercial protectorate over Mexico, so that her vast resources of material and labor will not be further wasted and consumed by the political turmoil that has already ruined her industries and brought her people almost to the point of exhaustion. It is not the purpose of this article to comment on the political aspects of this problem, but to present, if possible, an intimate view of the characteristics of the Mexican as a coal miner.

The most accurate figures available give the Mexican population as 65 per cent. illiterate, with the racial division 35 per cent. Indian, 43 per cent. Indian and Spanish, and 19 per cent. white. It will be seen therefore that the Indian strain predominates to a large extent, and this is especially true in the laboring classes. The same characteristics that are prominent in the American Indian may also be found in the Mexican, although the difference in climate and the Mexican's long association with the Spanish race has modified them to some extent.

YEARS OF OPPRESSION HAVE DULLED MEXICAN

Having been subjected for three centuries to the religious and civil oppression of the Spaniards, the Mexican has undergone almost a complete degeneration from the high standards of his Aztec ancestors. It has robbed him of his initiative, his sense of independence, his faith in his fellows, and of the appreciation of integrity, honor, sympathy and charity. It has made him distrustful of his superiors, suspicious of his equals and overbearing to his inferiors.

The most accurate estimate of a man's character and habits may be gained from an observation of his home life, and, what is true of an individual is true of a race. With the reader's permission, therefore, I will ask him to step for a moment into the home of a Mexican of the laboring class.

The wife will greet him with a fusillade of Spanish, inviting him to enter, offering one of the two chairs made of unfinished willow and cane, inquiring about his health and commenting on the weather, all in the same breath. She will sweep the dog, a small pig, two chickens and a tawny urchin in an abbreviated shirt from under the feet of the guest as he seats himself. The wrinkled grandmother pauses in her occupation of sniping the inhabitants in the straight black hair of a young girl about twelve, who takes in the visitor with great black eyes that stare with the frankest curiosity. Two small boys drop the burden of mes-

quite kindling which they have been gathering and gape in from outside the door. The visitor looks around him stealthily. He notices the bare floor hardened by generations of bare feet and the crude stove in the center of the room with the smoke rising through a hole in the roof. He wonders how the solitary bed accommodates a family of eight. He watches with interest while a stout, healthy looking girl whose baby is crawling at her side (evidently the daughter-in-law) deftly pats out a *tortilla* with the palms of her hands, and he is curious as to the spicy concoction simmering in the blackened *casuela* over the coals.

He wonders how people can live in such squalid surroundings, and if he is an employer of labor and unfamiliar with the Mexican, he might probably be tempted to offer him better opportunities. He could offer him a better home with clean paint and running water. His mine, for instance, would have shower baths for his convenience. Public schools would be available for his children. His mind would sum up the advantages which every progressive community in the United States offers to even the poorest, and he would secretly be impelled by a humanitarian motive to have the Mexican better himself by the opportunities an advanced civilization offers.

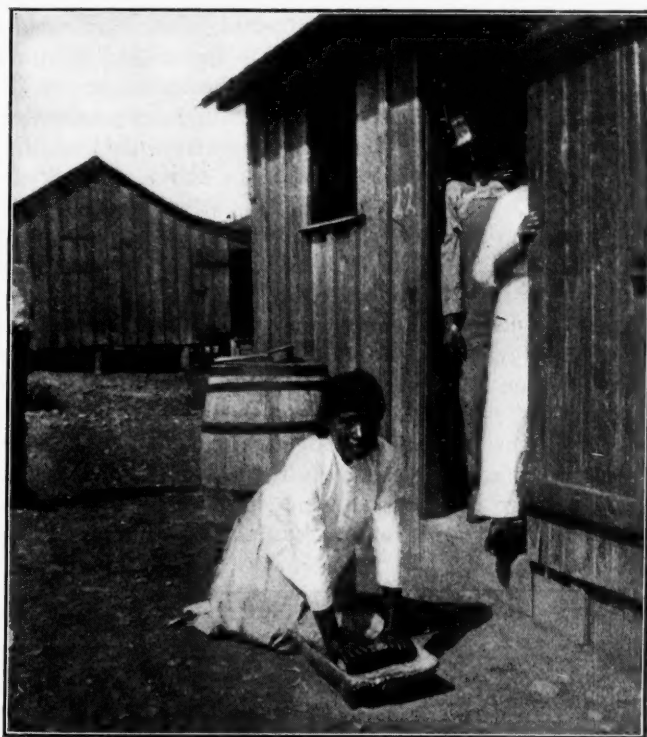
Like many other Americans who have been animated by the same motives, he would be doomed to a discouraging disappointment. He would find, if he imported him into his camp, that the Mexican not only brought his customs with him, but religiously adhered to them. The clean paint in his tidy company houses would soon be ruined by the smoke of the same crude stove. The same pigs, chickens, dog and children (or others like them) would litter up the front room. The



MEXICAN OVEN MADE OF SCRAP BRICK AND PEBBLES
It is held together with clay mortar and furthermore—it cooks!

same small boys would prefer to gather coal from the dirt dump than to go to school. The same grandmother (or her counterpart) would sit in the doorway

sniping the same inhabitants from the straight black hair of the same small girl. He would be obliged to shut off the water from the house on account of the



MAKING TORTILLAS IN A MEXICAN CORN MILL

faucets being constantly left open. He would find his shower baths utilized only on Saturday. In short, he would discover that the Mexican would obstinately stick to his native habits and customs, not only failing to take advantage of the facilities offered for his improvement, but sullenly resenting any effort to induce him to avail himself of such chances. In this respect, he differs entirely from the Poles, Slavs, Lithuanians and Italians, for example, as these have shown a remarkable adaptability in amalgamating with the American life and ideals.

This feature of the Mexican character is worthy of thoughtful consideration, for while there is no biological reason why the white and the Mexican races should not mix, it is undoubtedly true that it is harder for the white man to pull the Mexican up to his level than it is for the Mexican to pull the white man down to his. It is rare to find in instances of intermarriage that a white man or woman has succeeded in establishing his or her standard of living, habits and ideals over the Mexican.

While this characteristic of the Mexican would act as no deterrent to his usefulness as a miner, it does present a situation that requires delicate handling. It would be manifestly incorrect and improper to establish a race distinction, as is done in the case of the white and the negro races, yet the Mexican is neither capable nor in most instances desirous of establishing himself on an equal footing with the white man. He expects the white man to be superior and to have more privileges, and he is content that it should be so. He has been accustomed so long to have others do his thinking for him that his intellect has dulled. He views everything new with suspicion, since, like

all ignorant people, the new represents the unknown, and the unknown is to be feared. At this writing, there are hundreds of Mexicans flocking into Mexico from Texas, leaving work which is paying high wages and facing the uncertainty of employment, low wages, heavy taxes and the unspeakable living and sanitary conditions in Mexico, in spite of the assurance of the high military authorities of the United States Government and the advice of the Mexican consuls that they are neither needed nor wanted in the United States Army.

From the standpoint of his ability, there is much that can be said in favor of the Mexican laborer. Some of the most difficult railroad building in the world has been done with Mexicans, and before the revolution in Mexico the mining industry was successfully operated on a huge scale entirely with native labor, under the direction, of course, of foreigners.

Under the piecework system particularly, the Mexican makes a steady and faithful workman. He requires more supervision, and individually he is less capable of sustained effort than the Slavish races. He

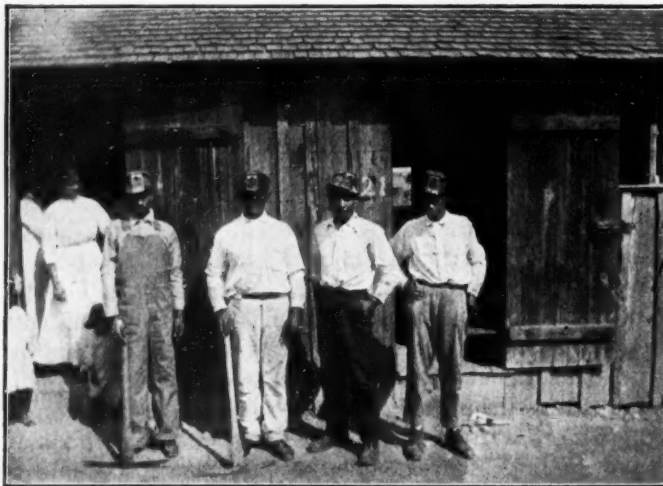
grown child, requiring patient and stern yet sympathetic handling to bring out the best that is in him.

However much the race elicits our sympathy, individually the Mexican cannot be treated successfully on any basis of reasoning, logic or even kindness. Such methods are measures he fails to understand. He finds it hard to distinguish between restraint and weakness, and gratitude is entirely foreign to his understanding.

He still retains the Indian characteristic of subtlety, and the axiom that a straight line is the shortest distance between two points is one he fails to comprehend. For this reason he is rarely honest and straightforward, and he will lie outrageously on the slightest provocation.

On the other hand, he is seldom unreasonable in his demands and will put up with extremely unfavorable conditions without complaint. On this account he would probably make a poor recruit for unionism, since his principles are never very strong and he is not constituted to be willing to make any sacrifices for them.

While the Mexican is not adept in the handling of machinery, he takes readily to underground conditions. He becomes expert in the use of powder and makes a

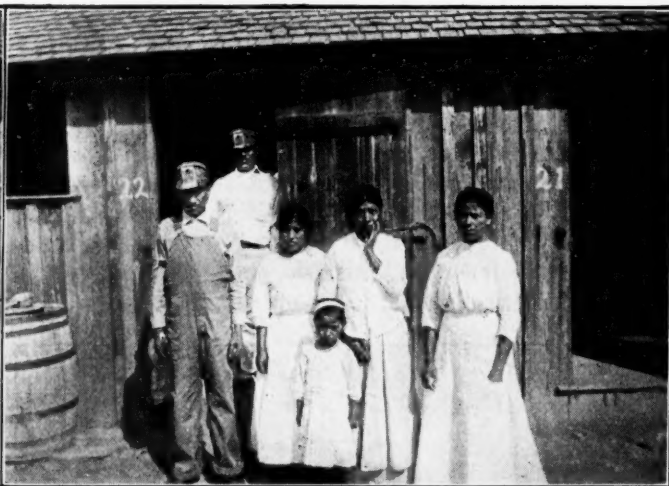


YES, THESE ARE MEXICAN MINERS
They adopt American clothes and even wear arm bands!

is notoriously slow to learn. He is not inquisitive, resourceful, energetic or ambitious. When he once learns a thing, however, he will do it regularly and faithfully, but Solomon in all his glory would have a hard time changing his methods. The height of antithesis, in my opinion, would be a modern efficiency engineer impressing his schedule on a gang of Mexicans. With the patience of Job he might succeed, but it would be a case of "the operation was successful, but the patient died."

I have known Mexicans who would refuse positively to throw an electric switch, yet who would turn right around and work day in and day out under roof which another miner would absolutely refuse to even walk under. The same miners who would walk out for two days should a woman happen to visit the mine during working hours I have known to fight a fire underground until overcome by exhaustion.

I could continue enumerating many more instances of such absurd contradictions, but these will suffice, perhaps, to illustrate the point I wish to make that in many respects the Mexican impresses one as an over-



A MEXICAN MINER AND HIS FAMILY
Not different from the typical miner's family in dress

good timberman. He has a good eye for distances and elevations and makes an efficient trackman. He generally knows how to handle animals and has no fear of the business end of a mule.

From time immemorial the Mexican has been classified as cheap labor. He has been forced to accept that valuation, and eventually he became cheap labor. To eke out his existence with the least effort became his sole ambition, and it is not surprising that under such circumstances he accumulated the shortcomings that now make him his own worst enemy. He has been accustomed to receive only about half the wage that is ordinarily paid for the same class of work in the United States, and it may be said that he will deliver only about half of the service. The ratio of two to one is perhaps large as far as his actual performance is concerned, but taking into consideration his avoidance of responsibility and his lack of loyalty and ambition, the proportion is not an unjust estimate.

What result might be expected if the Mexican miner were placed in the Northern coal fields is hard to prophesy with any degree of accuracy, although I should

say the chances of his sticking are very small. In the first place, the climate would be a great obstacle. He is not accustomed to cold weather, and his blood has been too impoverished by generations of scanty and unsanitary living to resist the rigors of exceptionally cold winters. He is very susceptible to disease, and while he can and does do more hard labor on less food than any race except the Chinese, he cannot approach the strength and endurance of the Scandinavian or the Slav.

Whether he would develop in time the mental stamina to compete with the hardier races I am not prepared

to say, but the lure of his native land with its life of irresponsible ease would be an ever-beckoning incentive to return. Poverty has no fears for him, and to lay aside something for a rainy day is a form of preparedness which to his way of thinking is as uncalled for as it is detestable.

The possibilities in the Southern coal fields, however, are more encouraging. The climate is nearer like that of his native environment. He has been employed with success in the coal mines of Texas, where he is slowly but surely adapting himself to the more advanced civilization demanded of him.

Location and Construction of Mine Tracks—V

By J. McCRYSTLE

Minersville, Penn.

SYNOPSIS—*Gravity grades do not work equally well with both loaded and empty cars. On curves, grades are frequently made to compensate, or partly compensate, the resistance of the curve. The track gage should also be increased on curves in order to allow the cars to traverse them easily. Such gage increase should never exceed 1 inch.*

IN THE vicinity of shafts, slopes, planes, etc., where cars are required to move without any mechanical aid, it is customary to depend on gravity for their movement. It is impossible to adopt a gravity grade that will work equally well with all the cars; a grade upon which some cars will run smoothly will permit others to run away and will not be sufficient for still others. Most of this difficulty arises from the oiling of the cars, the flat wheels developed in many instances and the nonuniform condition of mine cars in general, also the temperature and the weather.

The grade in the immediate vicinity of a shaft should be sufficiently steep and long enough to permit the car to gain headway quickly, and bump off the car delivered to the landing. If an empty car is to drive a loaded one off the cage, greater allowance should be given than if the reverse was the case.

While no absolute rule can be given, a loaded car on a grade of 5 per cent. for 12 ft. will be found in most instances to work well for removing empties from the cage. When the cage floor is inclined in favor of the car motion, a 2 per cent. to 2.5 per cent. grade with occasional assistance from the cage tender has given satisfactory results.

With the empty car driving off the loaded one, a grade of 5 per cent. for 20 ft. should be allowed; or with occasional help from the foot- or headman, a 2.5 per cent. to 3 per cent. grade.

The grade of the track leaving the cage should be about 2 per cent. to 2.5 per cent. in order to assist the car in leaving the shaft quickly.

It is customary to have about 50 ft. in the vicinity of the shaft, plane or slope landings somewhat steeper than the minimum grade required for the car to start unassisted, so as to expedite handling the cars. The

remainder of the turnout grade should run about 1.5 per cent. to 1.7 per cent. for loaded cars and from 1.6 per cent. to 1.9 per cent. for empty cars, on the straight track. A stretch of 50 to 100 ft. should be made level at the end of the turnout to retard motion and prevent the cars from running upon the main track.

When a curve occurs on a gravity grade, the compensation should be reversed; that is, the compensation should be added to the regular grade used for the tangents in order to allow for this curve resistance. The method of computing compensation has been treated in the preceding issue.

To illustrate: If the grade for straight track was 1.6 per cent. on a 100-ft. radius, or 57 deg. curve, $\left(\frac{5730}{100}\right)$, the compensation should be 0.6 to 1.4 ft. per 100 ft. The grade on the curve would thus be 2.2 to 3 per cent. Experience will determine the proper allowance to use for the cars employed.

Cars with the wheels turning loose on the axles will require a less compensation than those having the wheels keyed to the axle. The curve friction which the compensation is intended to equalize is due to the pressure of the flanges and the sliding, both lateral and longitudinal, of the wheels on the rail head.

In order to secure an easy running curve, three considerations are necessary: First, to elevate the outer rail to allow for the centrifugal force of the moving cars; second, to widen the gage of the track; third, to ease the approaches to the curve.

The elevating of the outer rail is termed the superelevation, and its amount is dependent on the velocity at which the cars are to travel, the radius of the curve, the gage of the track and the weight of the cars. This superelevation may be computed from the formula:

$$\phi = \frac{gV^2}{32.16R}$$

in which

ϕ = Superelevation required, in inches;

V = Velocity at which the cars are to travel, in feet per second;

g = Gage of the track, in inches;

R = Radius of the curve, in feet.

The numeral 32.16 is the force of gravity. By the foregoing formula the superelevation for a velocity of 6 miles per hour (the maximum velocity allowed by law in a number of states for haulages underground) and a 30-in. gage track should be as follows:

For a 40 ft. radius curve	1 1/2 in.
For a 50 ft. radius curve	1 1/4 in.
For a 60 ft. radius curve	1 1/2 in.
For a 80 ft. radius curve	1 in.
For a 100 ft. radius curve	3/4 in.
For a 150 ft. radius curve	1/2 in.
For a 200 ft. radius curve	3/8 in.

This superelevation varies directly as the gage, so that if the gage was 40 in., the superelevation would be $\frac{4}{3}$, or $1\frac{1}{3}$ times as great; or for 20 in. $\frac{2}{3}$, or two-thirds as great as that shown in the table.

The elevation varies, as will be noted in the formula, as the square of the velocity; that is, if the velocity is 12 miles per hour, instead of the figure for 6 miles per hour, for which the table was computed, the superelevation would be $(\frac{12}{6})^2$ or four times as great.

For example: If the gage was 40 in. and the velocity 12 miles per hour, the superelevation would be $\frac{4}{3} \times (\frac{12}{6})^2 = 1\frac{1}{3} \times 4$, or $5\frac{1}{3}$ times that shown in the table. The maximum superelevation, however, should not exceed about one-seventh of the gage.

In applying the superelevation the best practice is to proceed a distance back along the straight track approaching the curve and give the outer rail the elevation gradually, and at the same time start to gently curve the track, increasing the curvature more and more until when the curve proper is reached it will have the required curvature and superelevation.

The distance used to reach the full curvature and superelevation will depend largely on the amount of straight track on either approach to the curve; where possible, it is good practice to elevate 1 in. in the length of a rail and apply the curvature in the same distance. To gain a superelevation of 2 in., would mean proceeding back two rail lengths and achieving

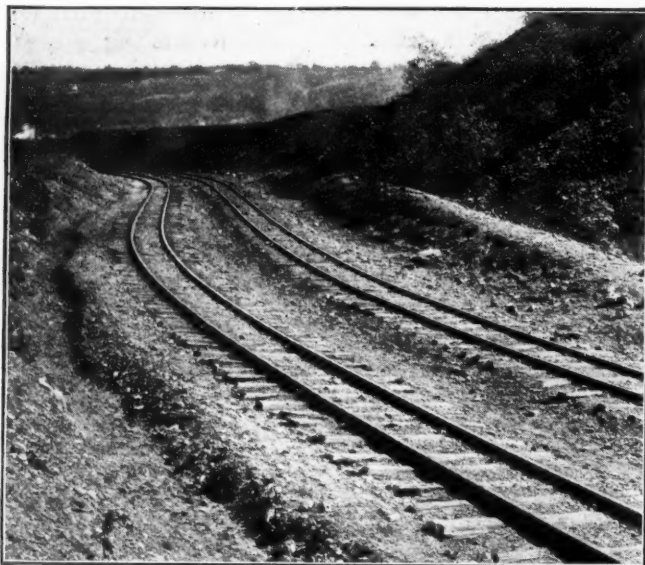


FIG. 12. WELL-LAID NARROW-GAGE REVERSE CURVE

the elevation in that distance. When the superelevation and curvature are applied skillfully, there should be no jar to the traffic when the curve is reached.

The maximum speed should be used in figuring the superelevation. This increase in height of the outer rail when within safe bounds tends to reduce the curve resistance. When the cars are moved by rope in both

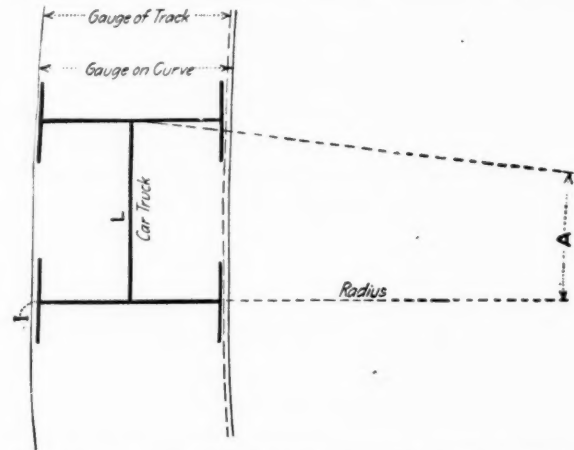


FIG. 13. POSITION OF CAR WHEELS ON A CURVE

directions over a curve the inner rail should be elevated instead of the outer, as the motive force tends to draw the cars toward the inside of the curve. When they are pulled by rope and allowed to return by gravity, pulling the rope with them, the outer rail should be raised but not to the full superelevation.

INCREASING GAGE OF TRACK ON CURVES

The cars in traveling around a curve do not move concentric to the axis of the curve, as is commonly supposed, but rather in a series of short tangents. Fig. 13 shows the normal position of the wheels in traveling around a curve.

One front wheel hugs the outer rail while the opposite back wheel tends to hold to the inner rail. The friction resulting from the action of the front outer wheel of course cannot be avoided; the flange friction of the hind inner wheel, however, can be reduced or eliminated by widening the gage of the track. The position that the rear axle and wheels will assume when free to move is radial to the curve, so that when the gage of the track is increased sufficiently, no friction will result from the pressure of the rear inner wheel flange laterally against the rail.

Another reason why the track gage should be increased on curves is that if any advantage is realized from the coning of the tread on the car wheels in consuming the extra length of the outer rail (which is very doubtful, as the position assumed by the rails bears no relation to that required by the coning), it can be better effected by permitting the lateral action necessary.

Also, as the hind lateral pressure is reduced, there is less force tending to narrow the wheel gage and produce an excess play on the axles, which trouble is quite common where the wheels revolve on the axle.

The distance which the gage of the rails can be increased is small, depending on the widths of the wheel treads, the condition of the wheel gage and the radius of the curve; 1 in. is about the maximum with ordinary rolling stock.

The distance by which the rear outer wheel stands from the outer rail on a curve, which is the theoretic

distance that the gage should be widened, is equal to the versed sine of the chord subtended by twice the length of wheelbase.

Expressing this relation as a formula:

Let

I = Theoretic distance in feet that the gage should be increased beyond the gage of the car wheels;

L = Length of wheelbase of the cars, in feet;

R = Radius of curve, in feet;

A = Angle subtended by the wheelbase $= \frac{L}{R}$,

Then

$I = R \text{ vers } \sin a$.

For example: If the car has a 5-ft. wheelbase, the theoretic distance the gage should be increased on a 1-deg. curve is:

$$A = \frac{5}{5730} = \sin a = 0 \text{ deg. } 03 \text{ min.};$$

$$I = 5730 \text{ vers } \sin a = 0.0022 \text{ ft.};$$

in which 5730' = radius of a 1-deg. curve, and $1 - \cos a = \text{vers } \sin a$.

This increase in gage should be applied gradually, as explained under superelevation. The theoretic distance required in excess of the wheel gage is as follows:

Radius, Ft.	Wheelbase 2½ Ft.	Wheelbase 3 Ft.	Wheelbase 3½ Ft.	Wheelbase 4 Ft.
40.....	¾ in.	1 in.	1¼ in.	2 in.
50.....	¾ in.	1 in.	1¼ in.	2 in.
60.....	¾ in.	1 in.	1¼ in.	2 in.
75.....	¾ in.	1 in.	1¼ in.	2 in.
100.....	¾ in.	1 in.	1¼ in.	2 in.
150.....	¾ in.	1 in.	1¼ in.	2 in.
200.....	¾ in.	1 in.	1¼ in.	2 in.

The foregoing distances apply to the wheel gage, not the track gage, and as mentioned before, the increase above the track gage will hardly be permitted to exceed 1 in., unless the treads are unusually wide.

Taking the case of a 50-ft. radius curve with a 3½-ft. wheelbase, the track gage being ½ in. greater than the gage of the wheels, the theoretic increase is 1½ in., which, as there is ½ in. allowance between the track gage and the wheel gage, and the treads of the wheels permit another inch, the full increase can be given.

With a 4-ft. wheelbase and ½-in. play between the gages on a 40-ft. radius curve, if 1 in. above track gage is allowed, there will be ¾-in. deficiency. This deficiency will have a resisting effect equal to moving the weight on the hind wheels ¾ in. by the curve length.

GUARD RAILS

When guard rails are necessary on curves they should be placed parallel to and at a distance from the inner rail such that they will restrain the flange of the front wheel from running over the head of the outer rail.

Where the wheels are not true to gage, as is often the case with loose wheels, the guards in this position are not very effective. Placing the guard at a distance equal to the tread of the wheels on the outer side of the outer rail and about 1 in. higher is often resorted to.

With rope haulage, the guard should be placed at a distance equal to the width of the tread outside the inner rail. At the bottoms of slopes and similar places, since the force is contrary in hoisting and lowering, the guard should be placed outside of both rails.

On planes and slopes it is good practice to have guards even though the track is straight. Such guards are usually made of wood and covered with flat or angle iron, and are made as high as the axle and journal box will allow. The type of journal and oil-box used on the cars, together with local conditions, will determine whether the guards should be placed inside or outside of the rails.

If the guards outside the inner rail of the curve are made of rail, by spiking them to ties distinct from those supporting the main rails they can be more readily brought back to the tread distance as they wear or are forced out of alignment.

(To be continued)

Large Coke Output in 1916

The production of coke in 1916 was 54,533,585 net tons, valued at \$170,841,497, an increase over 1915 of 12,952,435 tons, or 31 per cent. in quantity, and \$65,337,329, or 62 per cent. in value.

The output of beehive coke was 35,464,224 tons, having a reported value of \$95,468,127, an increase of nearly 29 per cent. in quantity and 67 per cent. in value over 1915. The production of byproduct coke was 19,069,361 tons, valued at \$75,373,070, an increase of 35.5 per cent. in quantity and 55.2 per cent. in value over 1915. Byproduct coke represented nearly 35 per cent. of the total in 1916, compared with 34 per cent. in 1915.

Gas Explosion at Clay, Ky.

The explosion which severely damaged parts of Mine No. 7 of the West Kentucky Coal Co., at Clay, Ky., on Aug. 4, was caused by the ignition of combustible gas, by a man who, wearing a lighted, open cap-lamp, was entering a short room near the face of a comparatively short rise heading (known as No. 2 South) which had been turned off the Seventh East (right) entry. This much has been ascertained by C. J. Norwood, state inspector of mines of Kentucky, and given to the representative of *Coal Age*. Later Mr. Norwood will make a detailed report of the disaster, which is the worst in the history of Kentucky mining. Kentucky has hitherto had an excellent record for safe mining, and recent changes were even thought to have increased that safety.

Altogether the deaths resulting from the explosion totaled 61, according to the count of the bodies removed during the ten days following the explosion. On Aug. 14 the management of the mine announced that reconstruction work was progressing satisfactorily and that it was expected operations could be resumed by the last of the week.

On being advised of the explosion, Mr. Norwood went at once to Clay, taking an active part in the recovery of bodies and making examinations underground as the rescue operations proceeded, completing the examination of the mine on Aug. 15.

The mine is 228 ft. deep, the deepest in the section around Clay. In the past ten years the West Kentucky Coal Co. has had two other explosions. Seven men were killed in mine No. 5 at Baker, and two or three in mine No. 4 at Wheatcroft.

Coal Mining Investigations—III

SYNOPSIS— *This installment treats of the research work conducted by the United States Bureau of Mines, the testing of explosives used in mines and the adoption of permissible explosives.*

LARGE-SCALE tests of the explosibility of coal dust take time and are expensive, so that the desirability of a reliable laboratory test of inflammability is obvious. For some years the development of such a test has been in progress in the Bureau of Mines. The measure of inflammability now used in the bureau is the pressure developed when a definite amount of dust, air dried and ground until its particles are of definite size, is ignited by being blown in a definite way against a source of heat of definite size and temperature.

APPARATUS USED IN THE EXPLOSIBILITY TESTS

The apparatus used at present consists of a thick glass bulb connected through a tubulure with a steam-pressure gage, and another tubulure, opposite the first, connected air-tight with a small glass funnel whose stem is bent to a right angle. The dust to be examined is placed in this funnel. Between the two tubulures, in the center of the glass bulb, is a rigidly held platinum tube that is heated electrically to 1200 deg. C. The dust is blown against the platinum tube by a puff of oxygen under definite conditions. The pressure developed by the ignition of the dust, which ranges from a few tenths



POWDER CAN BLOWN AGAINST PROP BY FORCE OF AN EXPLOSION

The coke on the can was deposited after the can was driven against the prop

of a pound to 20 lb. per sq.in., is registered on the gage. Tests of mixtures of coal and shale dusts are also made.

In general, predictions from these laboratory tests of the explosibility of bituminous dusts in mine tests have been satisfactory, but there has not been such agree-

ment between laboratory and mine tests, of anthracites and lignites. Further development of the apparatus is being attempted in order to obtain satisfactory results throughout the entire range of coals.

Opinions differ as to how flame spreads through a cloud of inflammable coal dust. Some investigators believe that the dust particles burn as a whole, but others hold that during the short period of heating, just before inflammation, combustible gases are distilled from the coal, and that these gases give rise to the explosion. If the latter view is correct, then the readiness with which the gas distills is obviously a factor determining the inflammability or explosibility of the dust.

The plan of the bureau's experiments has been to subject a suspension of dust (dust cloud) to momentary heating sufficient to cause inflammation in air, to repeat in an inert atmosphere (nitrogen), and to analyze the atmosphere for combustible gases. The source of heat in some of the tests was an incandescent weight, which was dropped through a dust suspension. The results of such test indicated that distillation of combustible gases was not a factor in the initiation of an explosion.

In work now under way the source of heat is a blast of hot gas. The results obtained agree with those of the other method. The amounts of combustible gases formed in the inert nitrogen atmosphere were far too slight to make explosive mixtures had the atmosphere been air instead of nitrogen.

THE PROBLEM OF EXPLOSIVES

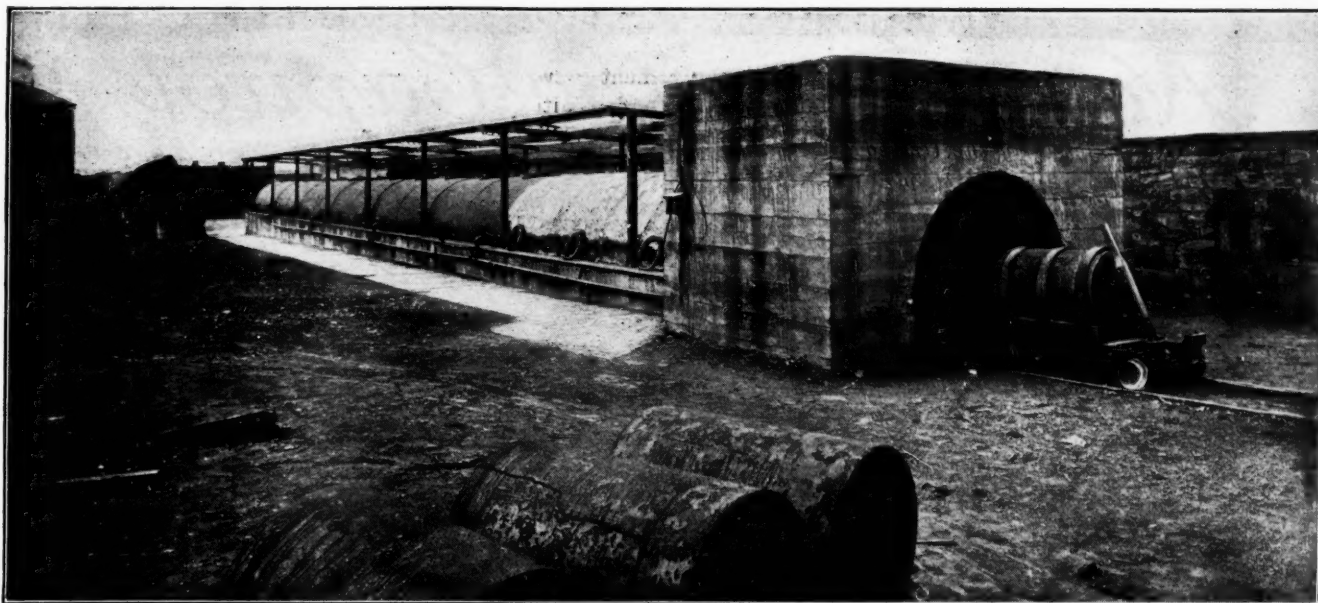
The explosives used in coal mines not only cause accidents such as happen in the use of explosives elsewhere, but they have given use to widespread disasters by igniting explosive mixtures of mine gas and air and of coal dust and air, or both. In addition, the firing of explosives so shakes the walls and roofs of the mines as to cause falls, with their attendant casualties.

In view of the large number of explosives and their wide range in composition and properties, it is obvious that certain of them should prove more suitable for use in mines than others. The problem is to determine which explosives are the most suitable for this purpose and the precise conditions under which they may be used with the greatest safety.

This problem could be worked out in actual mining, but experimental investigations in a working mine are hazardous and slow. To obtain the information sought, in the speediest and most economical manner, laboratory methods are required.

The Bureau of Mines at its Pittsburgh experiment station has equipment for such laboratory testing of explosives. These tests involve chemical and physical examinations and the detonation of charges under carefully controlled conditions.

With the coöperation of explosives manufacturers the bureau has evolved a type of explosive especially intended for use in gaseous or dusty coal mines. Such explosives, termed permissible explosives, are tested and approved by the bureau, which also prescribes conditions under which they must be used to be regarded



GAS AND DUST GALLERY NO. 1 AND CANNON MOUNTED ON TRUCK

as permissible. Thus the bureau prescribes that an explosive is not to be regarded as permissible unless used with a detonator (blasting cap) of proper strength.

The apparatus employed in testing explosives and the methods of using it are briefly outlined in the paragraphs following:

Every explosive tested for permissibility is examined as to its physical properties, including the determination of the average diameter, length and weight of the cartridge, whether the cartridge has been dipped more than once in moisture-proofing material, the apparent specific gravity of the cartridge, the weight of the wrapper per 100 grams of explosive, and the color and consistence of the explosive.

TESTS TO DETERMINE STRENGTH AND SAFETY

When feasible, screening tests are made to determine the sizes of the different ingredients. Some of the tests made to determine the strength and relative safety of the explosive are described below.

A ballistic pendulum is used to measure what is termed the deflective force of the explosive. A charge tamped with dry clay is loaded into a small cannon, and the charge is fired against the pendulum, which is a mortar weighing 31,600 lb., suspended by means of a stirrup from two cast-steel saddles fitting over a steel supporting beam that rests on nickel-steel knife-edges. The amount of the explosive being tested that causes the pendulum to swing as far as will a charge of $\frac{1}{2}$ lb. (227 grams) of the Pittsburgh experiment station standard 40 per cent. "straight" nitroglycerin dynamite is known as the unit deflective charge. It must be less than 1 lb. (464 grams). This test indicates the coal-getting strength of an explosive.

The liability of an explosive to produce an ignition of coal dust in a mine is determined by firing it in what is known as gas and dust gallery No. 1. This consists of a steel cylinder 100 ft. long and $6\frac{1}{2}$ ft. in diameter. In part of the gallery are placed sensitive explosive mixtures of gas and air, coal dust and air, or gas, coal dust and air. The discharge into the

gallery is similar to a "blown-out shot" in a mine. An explosive is considered to have passed the gallery test if no one of the prescribed shots ignites the mixture into which it is fired.

In tests 1 and 3, described below, 10 shots are made. For each shot a charge equivalent to the unit deflective charge of the explosive is used; the explosive is placed in its original wrapper, and each shot is tamped with 1 lb. of clay stemming.

In test 1, on each trial, a mixture of gas and air containing 8 per cent. of gas (methane and ethane) is used.

In test 3, on each trial, 40 lb. of bituminous coal dust is used, 20 lb. being distributed uniformly on a wooden bench placed in front of the cannon, and 20 lb. being placed in side shelves in the second 20 ft. of the gallery.

In test 4, five shots, each with a $1\frac{1}{2}$ -lb. charge, are fired without stemming. A mixture of gas and air containing 4 per cent. gas (methane and ethane) and 20 lb. of bituminous coal dust is used. Eighteen pounds of the coal dust is placed on shelves along the sides of the first 20 ft. of the gallery, and 2 lb. is so placed in a part of the gallery inclosed by a paper diaphragm that it will be thrown into suspension by an air current.

The rate of detonation (or "quickness") of an explosive is determined by firing a charge in a covered pit. The explosive ends of the cartridges are cut off and the cartridges are placed in a sheet-iron tube which is suspended in the pit. Through perforations in the side of the tube two wires pass through the explosive at intervals of 1 m. along the length of the tube. A No. 7 electric detonator inserted into one end of the cartridge file detonates the explosive. Each of the wires passing through the charge is electrically connected to a Mettengang recorder which has a soot-covered bronze drum revolving rapidly at a known speed. When the explosion breaks the electric circuit through the wires by a wire passing through the long cartridge, an electric spark makes an impression on the drum.



AMONG the important activities that had a bearing on the developments of the week was the conference between President Wilson; Francis S. Peabody, chairman of the Committee on Coal Production; John P. White, president of the United Mine Workers of America, and William Green, secretary of each organization. On leaving the President's office, Mr. White dictated the following statement to which Mr. Peabody concurred:

The President was advised to act quickly in creating an agency, as authorized by Congress, providing for Federal supervision and control of coal production and distribution. The mine workers' representatives stated to the President that agitation by State Councils of Defense, state organizations and state governments looking to state control of coal-mining operations and coal production was, in their opinion, doing much harm, and that this injurious effect would be overcome only by Federal action and Federal control. The President was requested that with the agency or authority, through which the Government would exercise control over coal production, that representatives of all elements, miners and operators, engaged in the production of coal would be associated. It was their opinion, based upon knowledge and experience, that coöperation of all forces engaged in coal production could be brought about if they were represented in an advisory capacity or otherwise, with the agency or authority exercising governmental control. We deny most emphatically that either a request or suggestion was made in opposition to a reduction of the selling price of coal. Our mission was for no other purpose than as stated herein.

To relieve the coal situation in the Northwest, the first priority order was issued Aug. 20, just ten days after the passage of the bill giving this power to the President. The order directs the railroads serving Lake Erie ports "daily to give preference and priority in the distribution of cars to coal mines served by them and transport the same so that bituminous coal for transshipment as aforesaid by Lake shall have preference and priority in transportation."

The portion of the order referring to vessels engaged in the Lake trade is as follows:

All common carriers by water engaged in shipment of Lake bituminous coal, as aforesaid, shall and they are hereby directed, until further order, to accept and receive all cargoes of such coal tendered to them for shipment as aforesaid, and to so load, transport and deliver the same that it shall have preference and priority in transportation.

The railroad companies to which this order and direction applies are: Baltimore & Ohio Railroad Co., Campbell's Creek Railroad Co., Cherry Tree & Dixonville Railroad Co., Chesapeake & Ohio Railway Co., Cincinnati, Hamilton & Dayton Railway Co., Cleveland, Cincinnati, Chicago & St. Louis Railway Co., Coal and Coke Railway Co., Cumberland & Pennsylvania Railroad Co., Dents Run Railroad Co., Detroit & Toledo Shore Line Railroad Co., Detroit, Toledo & Ironton Railroad Co., East Broad Top Railroad and Coal Co., Erie Railroad Co., Hocking Valley Railway Co., Huntingdon & Broad Top Mountain Railroad and Coal Co., Kanawha & Michigan Railway Co., Kanawha & West Virginia

Railroad Co., Kittanning Run Railroad Co., Lake Erie & Western Railroad Co., Lake Erie, Franklin & Clarion Railroad Co., Louisville & Nashville Railroad Co., Monongahela Railway Co., Morgantown & Kingwood Railroad Co., New York Central Railroad Co., New York, Chicago & St. Louis Railroad Co., Norfolk & Western Railway Co., Northern Ohio Railway Co., Pennsylvania Co., Pennsylvania Railroad Co., Pere Marquette Railroad Co., Pittsburgh & Lake Erie Railroad Co., Pittsburgh, Chartiers & Youghiogheny Railway Co., Pittsburgh, Cincinnati, Chicago & St. Louis Railroad Co., Sandy Valley & Elkhorn Railway Co., Toledo & Ohio Central Railway Co., Toledo, Detroit Railroad Co., Toledo, St. Louis & Western Railroad Co., Wabash Railway Co., Wabash Pittsburgh Terminal Railway Co., Washington Run Railroad Co., West Side Belt Railroad Co., West Virginia Northern Railroad Co., Western Maryland Railway Co., Wheeling & Lake Erie Railway Co., Youngstown & Ohio River Railroad Co., Zanesville & Western Railway Co.

In connection with the priority order, which was signed by Judge Robert S. Lovett, the following official statement was made:

Judge Robert S. Lovett, member of the War Industries Board of the Council of National Defense in charge of priority, has been designated by the President as administrative officer under the provisions of the Priority Shipments Act, approved Aug. 10.

Realizing that drastic action was necessary if the Northwest secured its coal requirements before the close of navigation, Francis S. Peabody, the chairman of the Committee on Coal Production, called a conference of railway officials and others to discuss that situation. The following resolution was adopted and recommended to the consideration of the coal operators, railroad officials and Federal authorities:

That it is the sense of this meeting that in view of the fact that the measures taken by the War Board in the efforts to increase coal shipments to the Northwest have proved ineffective, that unless peremptory orders be issued from some authoritative source to all coal operators in the Pittsburgh district, the Fairmont district and the No. 7 Ohio district, that they must ship 50 per cent. of the cars (excepting cars for railroad fuel) furnished to their mines west until further notice, or until the present emergency is met, the situation in the Northwest next winter will amount to a calamity.

The action was based on the following report submitted by a subcommittee appointed by Mr. Peabody:

Aggregate tonnage to move during the season of 1917 was	29,000,000
Forwarded to Aug. 11, inclusive.....	12,000,000
Remainder to move up to the close of navigation....	17,000,000
Period remaining embraces.....	16 weeks
Requiring shipment at a weekly rate of.....	1,062,000
Coal now moving at a weekly rate of.....	940,000
The estimated weekly increase via the port of Toledo, based upon increased transportation efficiency.....	200,000
Based on present operation this gives a weekly tonnage of	1,140,000
Total for 16 weeks.....	18,100,000

The foregoing represents a performance that can be made only under favorable seasonal and weather conditions, on the Great Lakes. In the event seasonable conditions compare with the average of the past 25 years,

the experience gained by the vessel owners determine that 50 per cent. of this tonnage should be delivered with the close of the month of July; that the remaining 50 per cent. should move as follows: August, 5,950,000 tons; September, 5,100,000 tons; October, 3,400,000 tons; November, 2,550,000 tons; making a total of 17,000,000 tons.

The spread of the remaining 50 per cent., however, will be altered by the fact that the Lake Erie Bituminous Coal Exchange has now perfected an arrangement with the vessel owners of all of the fleets navigating the Great Lakes, to the effect that an adequate supply will be furnished by the vessel owners at all Lake Erie ports as rapidly as cargoes of bituminous coal have been completed, under which conditions a substantial increase can reasonably be expected during the months of September, October and November, which in effect will represent an increase of approximately 3,000,000 tons over the same period of 1916, provided coal is available to be moved.

Further discussion of the subject developed that the situation at the Lake Erie front is that the ports west of Cleveland are up to full normal operating capacity, and ports of Cleveland and east to Erie, Penn., inclusive are subnormal due to shortage of shipments from Western Pennsylvania, Fairmont, Cambridge and Ohio No. 8 districts.

In order to bring Lake coal to a tonnage adequate to Lake necessities, it is necessary to increase shipments from the above mentioned districts which, in the judgment of this meeting, can only be accomplished by observing the action proposed in the resolution adopted at a meeting held at Cleveland, Ohio, on Aug. 1, between the Lake coal and iron ore shippers, representatives of the Northwestern dock interests and railroads serving Lake Erie ports, arrived at after a thorough consideration of this question.

The railroad's war board, in commenting on the Lake situation, authorized the following statements:

For reasons entirely beyond the control of the railroads, this large increase in the movement of coal has sought markets other than those reached via Lake Erie ports or via those ports to Lake Superior and Lake Michigan ports.

Another step was taken by the railroads in ordering the return to the lines serving the Lake ports of all their self-clearing coal cars needed to handle this particular kind of coal business, with the further order that such cars be not permitted to leave such lines during the season of Lake navigation.

If coal is forwarded freely to Lake Erie ports, empty cars are provided for iron ore going back, which will give a load in each direction and increase the total efficiency of the railroads, besides providing the necessary fuel and the iron ore needed for the furnaces up to June 1, 1918.

Directors for the National Association of Coal Operators were selected Tuesday. The men who will direct the affairs of the new association are: H. N. Taylor, Kansas City; Rembrandt Peale, central Pennsylvania; Howell B. Davis, Knoxville, Tenn.; F. C. Honnold, Illinois; A. M. Ogle, Indiana; George H. Barker, Ohio; W. F. Field, western Pennsylvania; J. J. Tierney, smokeless fields of West Virginia; J. Wheelwright, high volatile region of West Virginia. The Association, at the close of the day's session, represented 20 associations and 619 operating companies producing 150,000,000 tons annually, or 30 per cent. of the country's production. To work out the details of the organization and to render

the assistance requested by the coal committee will require a week it is estimated.

Quite contrary to expectations, President Wilson took the matter of price fixing into his own hands Tuesday and prescribed provisional prices to cover all the coal-producing districts in the country. The announcement of the method of administering the fuel supplies was not forthcoming. It had been predicted that the President would designate a fuel administrator. The prices fixed are one-third lower than those agreed upon voluntarily by the operators themselves. The statement as given out at the White House is as follows:

The following scale of prices is prescribed for bituminous coal at the mine in the several coal-producing districts. It is provisional only. It is subject to reconsideration when the whole method of administering the fuel supplies of the country shall have been satisfactorily organized and put into operation. Subsequent measures will have as their object a fair and equitable control of the distribution of the supply and of the prices not only at the mines but also in the hands of the middlemen and the retailers.

The prices provisionally fixed here are fixed by my authority under the provisions of the recent act of Congress regarding administration of the food supply of the country, which also conferred upon the Executive control of the fuel supply. They are based upon the actual cost of production and are deemed to be not only fair and just but liberal as well. Under them the industry should nowhere lack stimulation.

WOODROW WILSON.

	Run of Mine	Prepared Sizes	Slack or Screenings
Pennsylvania.....	\$2.00	\$2.25	\$1.75
Maryland.....	2.00	2.25	1.75
West Virginia.....	2.00	2.25	1.75
West Virginia (New River).....	2.15	2.40	1.90
Virginia.....	2.00	2.25	1.75
Ohio (thick vein).....	2.00	2.25	1.75
Ohio (thin vein).....	2.35	2.60	2.10
Kentucky.....	1.95	2.20	1.70
Kentucky (Jellico).....	2.40	2.65	2.15
Alabama (Big Seam).....	1.90	2.15	1.65
Alabama (Pratt, Jaeger and Corona).....	2.15	2.40	1.90
Alabama (Cahaba and Black Creek).....	2.40	2.65	2.15
Tennessee (eastern).....	2.30	2.55	2.05
Tennessee (Jellico).....	2.40	2.65	2.15
Indiana.....	1.95	2.20	1.70
Illinois.....	1.95	2.20	1.70
Illinois (third vein).....	2.40	2.65	2.15
Arkansas.....	2.65	2.90	2.40
Iowa.....	2.70	2.95	2.45
Kansas.....	2.55	2.80	2.30
Missouri.....	2.70	2.95	2.45
Oklahoma.....	3.05	3.30	2.80
Texas.....	2.65	2.90	2.40
Colorado.....	2.45	2.70	2.20
Montana.....	2.70	2.95	2.45
New Mexico.....	2.40	2.65	2.15
Wyoming.....	2.50	2.75	2.25
Utah.....	2.60	2.85	2.35
Washington.....	3.25	3.50	3.00

Note—Prices are on f. o. b. mine basis for tons of 2,000 lb.

What is expected to be the most comprehensive compilation of cost statistics covering coal mining is being assembled under the direction of Francis S. Peabody, chairman of the Committee on Coal Production, for presentation to the Federal Trade Commission. Mr. Peabody has summoned to Washington the auditors of many of the large coal companies and has appealed to the National Association of Coal Operators for assistance. Since the prices fixed by the President are provisional, these statistics will be presented so as to enable the Federal Trade Commission to reach final figures which will be more accurate than those on which the prices designated by the President were fixed.

To discuss the situation which has been precipitated by the prices fixed by the President, all the coal operators in the United States have been called by the Board of Directors of the National Association of Coal Operators to meet Aug. 29 at the William Penn Hotel in Pittsburgh.

The Labor Situation

General Labor Review

The executive boards of all the three district unions in the anthracite region met at Wilkes-Barre on Aug. 16 for the purpose of outlining plans for a joint meeting of the representatives of miners and operators to discuss the closed shop in the anthracite region. As no word was received from the operators no action was taken. The union had fixed Aug. 21 as the date for the meeting, provided that date was satisfactory to the operating companies.

It has been said that the operators are too busy with the Council of National Defense to have time to discuss the closed shop, but it is more likely that the operators are little disposed to consider the modification of their contract. They recall that only on May 1 of this year they most generously modified it. Does it have to be pieced and patched every three or four months? The habit of remodeling grows, and they may well ask: Of what value is a contract if it is subject to such frequent refurbishment? The Delaware, Lackawanna & Western R.R. Coal Department has its trouble with the general grievance committee—a body peculiar to the union politics of that company. The general committee of so large a company is apt to believe itself superior to orders from district presidents and executive boards, and the union consequently finds it hard to keep it in control. The difficulties with "shelf" coal or "bottom" coal, as it might better be termed, are nothing new. The company believes with some reason that the loaders are making enough money to meet these difficulties as they arise.

One correspondent reports that "All pleas for continuous operation of the collieries are without effect." The men knowing that jobs are easy to get absent themselves at will, and take as many after-payday holidays as in times less stirring than these. At Audenried No. 4 colliery of the Lehigh & Wilkes-Barre Coal Co. the picker boys tied up the plant because one of their number was in arrears in the payment of his union dues. This colliery is suffering from a shortage of inside men, but is able to keep up shipments, because it is drawing large quantities of coal from its strippings. At these strippings three steam shovels of the revolving type are loading more coal with less labor than was formerly needed.

In Illinois, Frank Farrington has managed to quiet the strike trouble. Many of the men probably were anxious for a few days of idleness. They thought "it was time to knock off anyhow." Not a few struck because they did not want the drivers to call them "scabs." There was no real unanimity of sentiment, and when Farrington read the strikers out of the union the men who wanted to work were heartened to do so. In Illinois mines "Stand by the President" is not without force. The only men who wanted to stay out were the Socialists.

The strike in southeastern Kentucky and in Tennessee still continues. The mines are closed down tight. No arrangements have so far been made between the mine workers and individual operators. In Alabama a strike was called for Aug. 20. On Aug. 17, John P. White, William Green, J. R. Kennamer, district president for Alabama, and William Harrison, member of the international board for

Alabama, telegraphed all the unions that Secretary of Labor Wilson had called a conference to meet with him in Birmingham, Ala., "for the purpose of opening negotiations looking to a settlement of the mining controversy in the state." They added: "In deference to the request of our Government and in accordance with the policy adopted at our convention, we instruct mine workers to continue work pending the outcome of this meeting."

Who Shall Lift Bottom Coal?

Mining machines properly placed by competent men will mine coal lying on a smooth bed without leaving a slab near the bottom rock. But sometimes men are not competent, and sometimes they place the machine so that it cuts up into the coal; then, again, sometimes the seam is capricious and after going up will turn downward, and somehow a

slab, a wedge, a segment of coal is left in the floor. Who shall lift it? This trouble arose in the Taylor colliery of the Delaware, Lackawanna & Western R.R., Coal Department. The miners working after the machines—in the bituminous region they would be termed "loaders"—complained to the efficiency engineer. It is alleged that he agreed to supply men to lift the coal and that the company then refused to accept his promise as binding and notified the men that if they did not pick up the coal on the bottom they could take

out their tools and quit. There are about 35 of these loading miners and about five of them apparently pressed the grievance. The company says that the miner was paid wages which took into tacit consideration all the difficulties associated with the work, of which the difficulty about which the complaint was lodged was one. The company declares that the men were making \$150 to \$175 a month and were working only five or six hours a day.

It seems reasonable that every man who agrees to do a piece of work for a given price accepts all the work implied in doing the work unless exceptions have been provided for. If a real hardship was worked, the contract might be revised; but men making so large an income could hardly be relieved from their contract obligations.

However, no matter how reasonable or unreasonable their demands are they had no right to strike. Still less have the men employed with them the right to go out in sympathy. This, however, they did, and what is more, they interested the general grievance committee of the company and almost brought about a general strike of all the company men. If they had been successful, 12,000 mine workers would have been made idle.

When the executive boards of the anthracite districts met on Aug. 16 they protested emphatically against the Taylor colliery strike, against its approval by the general grievance committee and against the proposal to make the strike extend to all the mines of the company. The mine workers were ordered to ignore any strike order the grievance committee might issue. John P. White, by telegram, condemned the strike order, and the grievance committee withdrew it the day before it was due to come into force, Aug. 20. The committee in a graciously compliant mood agreed to order the Taylor colliery men back to work.

The proud boast of every trade unionist should be unstinted loyalty to these United States of America. Observance of contracts should be the aim of every member as well as every union official. We must play our part in the war manfully and well. Every legitimate endeavor should be exercised before a tie-up in any trade results.

We must keep pace with time. Go forward, not backward. Ungrudgingly give the best that is in us if we are to expect the best in return. Conditions are being transformed overnight; we must meet these new demands, safely and sanely.—John P. White in Labor Day Statement.

The union does not go joyously into the breaking of strikes no matter how clearly those strikes may be shown to be wrong and violative of express agreements. A recent settlement illustrates clearly why this is so. The differences between the international organization and locals Nos. 1358, 1403 and 2354 at Shenandoah, Schuylkill County, have only just been adjusted after being in the courts for a year. These three locals were suspended 13 months ago for paying dues to men who were on strike contrary to the contracts of the union and the union rules. The settlement calls for the payment by the locals of three months per capita dues for each member and reinstatement of both the locals and their membership. But for a long time it looked as if the international union had been completely worsted by the local unions and would have to make an even more complete submission than that just recorded.

Peace in Pennsylvania Soft-Coal Mines

From Meyersdale, or, rather, Salisbury Junction nearby, the Baltimore & Ohio R.R. runs a spur up the Castleman River almost to the Maryland state line. It is a short road lying deep in the heart of the Alleghenies far away from other operations. It is about the only section in central Pennsylvania where mines are closed for labor trouble. There is no disorder, but the men are stubbornly holding out for their demands and have done so for nearly a month. Otherwise there is no labor trouble in the state.

Farrington Settles Illinois Strike

The strike of company men in the Central Illinois field which started about ten days ago spread rapidly over the entire central field, practically causing a complete shutdown of the mines of the district, which have an estimated product when in operation of 100,000 tons a day. It was extending into the Fifth and Ninth districts and even into the southern Illinois field when it was checked by President Frank Farrington, of the Illinois United Mine Workers, who ordered the strikers to return to work on pain of expulsion from the union and reminded the pit committees that it was their duty to supply men to take the places of the strikers, adding that miners who refused to take the strikers' places would be expelled from the union as if they themselves had gone on strike.

The demand of the strikers, drivers, top men and other day-wage workers was for nine hours' pay for eight hours' work. Although in practically all cases the miners did not join in the strike, they could not work no matter what their sympathies were. The shutdown at its height affected about 20,000 men.

Early in the week Farrington felt that the situation was beyond his control and so notified the Coal Production Committee of the Council of National Defense. He took occasion at the same time to place the blame on the Illinois council, charging the members, particularly Levy Mayer, with stirring up dissatisfaction among the miners by statements that the operators were making enormous profits.

Farrington at that time stated that fifty mines were closed in the Central, the Decatur-Pana, the Chicago & Alton and the Fifth and Ninth districts.

The Illinois Coal Operators, the Central Illinois Coal Operators and the Coal Operators of the Fifth and Ninth districts joined in a communication to the district executive board of the United Mine Workers at Springfield, declaring positively that they would not grant the increases asked by the men and insisting that the district organization use its full power to compel the men to return to work.

Farrington, after the receipt of this communication, sent a strong telegram to the president of every local in the strike zone. In it he declared that the strikers were flagrantly violating the joint agreement and were demanding wages in excess of those specified in that instrument.

Continuing, the telegram read: "If drivers and shift hands refuse to report for work they are to be expelled from our union. Your attention is also directed to the fact that under paragraph C of the thirteenth section of the joint agreement the pit committee is obliged to fur-

nish men to fill the places of day hands who refuse to return to work. Any member so solicited who refuses to respond to the request of the mine committee is equally guilty with day hands and subject to the same punishment. You are instructed not to issue any transfer cards to any of your members until authorized to do so by me.

"I assure you the situation is most desperate and is bringing our organization into disrepute; in fact, it threatens to demoralize and seriously injure the Illinois miners' union and it is the bounden duty of every member to join with the officers of the organization in their effort to force obedience to the requirements of our joint agreement, the laws of our union and the authority of its accredited representatives."

The telegram produced an immediate effect. Reports began coming into Springfield that the men at different mines were returning to work, and the indications are that all will return. The drivers are yielding with poor grace to the overwhelming vote of the men in the locals and declare that they will make a later effort to get an increase, admitting that they are jealous of the diggers, who are getting from \$5 to \$12 a day. Secret-service men are investigating reports that the strike was started and spread by agitators not connected with the union.

Four hundred miners employed by the Lumaghi Coal Co. at its No. 2 mine at Collinsville, Ill., have gone back to work after being on strike for two weeks. The dispute was about the accuracy of the scales. On the advice of L. P. Franke, of Spring Valley, Ill., a member of the State Miners' Federation, who had been sent to settle the trouble, the mine workers decided to return to work.

Shutdown in Southeastern Kentucky

What is practically a complete tie-up of mining operations continues in union district No. 19, covering southeastern Kentucky and Tennessee. There are conflicting reports from centers in this field as to the state of affairs, but the operators insist that there has been no progress made by the strikers, and that of perhaps 23,000 miners less than 3000 are at work. Numerous statements emanate from union headquarters to the effect that scores of operators are making individual contracts with their striking employees, but well-posted coal men state that the operations named are mostly wagon mines or mines with small outputs.

At the end of 10 days there had been no disquieting developments. In most instances the operators have permitted the men to occupy their houses, and in some cases commissaries are being conducted. The international union is reported to have promised the strikers relief funds. Many mine entrances are boarded up and the miners are fishing in the mountain streams. C. R. Coleman, of the Coleman Mining Co., Pineville, Ky., is seeking a mandamus to compel the miners employed by his company to resume work and to prevent the union from interfering.

Both operators and men are looking every moment for intervention on the part of representatives of the Government. Mediators and representatives of the Federal Government are in the field and are undertaking to find a common ground on which an agreement can be reached. John E. McMillan, mayor of Knoxville, Tenn., has offered his services as mediator. Conferences, it is said looking toward that end, have been held between E. C. Mahan and other representatives of the operators, and Frederick G. Davis, of the Department of Labor, at Knoxville. The Kentucky Federation of Labor at a meeting held in Louisville adopted resolutions calling on the Government to intervene and settle the strike. Large advertisements have been inserted by the striking miners in the Louisville papers setting forth the contentions of the union organization. Comparatively few miners are leaving the field.

The decreased prices of coal largely destroys the argument of industrial prosperity from which an increased wage scale was expected by mine workers in the spring. Decreased costs of living will remove the other argument that wages should rise with mounting prices. It is to be hoped that we may have industrial peace.

The Truth About Wagon Mines

WITHIN the past year, hundreds of small coal mines have been opened and many similar enterprises are now under way. To relieve the shortage of coal? Oh, no! To make a profit, and at the same time to reduce the quantity of coal mined, so that prices may be maintained or increased and profits swelled accordingly.

Let us take the John Doe mine for example: Two miles from a trunk-line coal road John Doe finds an old country coal bank, from which many years ago the former owner dug a few tons of coal for his own supply. The coal bed is not so thick or the mining conditions so favorable as upon other properties worked on a large scale near-by, but John Doe is a "money getter," and he loses no time in leasing the mining right from the owner. If he has no money, he borrows \$1000 or \$2000, buys five or six mine cars and a mule, contracts with the farmer to cut some mine props for timbering, and is ready to lay the foundation for his fortune, for coal will bring \$4, \$5 or \$6 on the cars at the nearest railroad siding.

Miners working at large mines near-by can be had on satisfactory terms, and he hires five or ten miners and they commence to "pick-mine" the coal, which means not pick-mining at all, but "shooting off the solid" (blasting), thus blowing the coal into small pieces and incidentally mixing the coal with all the slate and refuse which the coal bed may contain. At the mine from which they came these miners were mining with machines, and the output averaged over six tons per day per man. At John Doe's mine they can average only about four tons or less per day per man, but John Doe pays a rate per ton that is satisfactory, so why object? By the time he has ten men working, he is getting out 40 tons a day and that means a very nice daily profit.

To ship this coal he orders the agent of the railroad to supply him with one coal car a day, to be placed on the railroad siding nearest his mine, and he offers to the farmers an opportunity of hauling his coal from the mine to the railroad at a price per ton that looks like "big money" to the farmer. Soon the road is lined with farmers' teams and farmer teamsters, each earning more than he thinks he can earn with his team on his own farm. The farmer is getting his pay every week. If he used the team to plough the ground, he would have to wait three or four months to turn his crop into money, and perhaps the crop would be a failure or perhaps the price of potatoes and oats might then be too low to give a satisfactory profit; and if he does not raise enough feed for his stock, he will have money to buy feed—so why worry?

John Doe is now producing 40 tons of coal daily; he is making a profit of \$40 to \$60 daily. The miners are well paid, the teamsters are well paid, the horses are well fed, John Doe's customers are glad to pay a high price for his coal—and John Doe is pocketing the profit.

The author of the article on this page says that small coal mines are a menace. By means of a hypothetical instance he deduces a table which, if substantiated by figures, would tend to prove his contention that wagon mines are at the present time detrimental to the best interest of the country and should not be encouraged.

But, the mines at which the miners now working for John Doe formerly worked are producing 65 tons less a day than formerly; the eight or ten farmers hauling coal for John Doe have not planted their usual crops, and the crops planted are being

neglected, so there is a decrease in the production of wheat, rye, oats, buckwheat, potatoes, cabbage and other vegetables and fruits; fruits and vegetables of medium or inferior grade are not gathered or shipped to market, and there is a corresponding decrease in the hogs, sheep, calves and chickens, which would have been raised to consume the feed crops that would have been grown had the farmers not turned teamsters; but John Doe is pocketing a profit of \$40 to \$60 a day!

The railroad loses the freight on 25 tons of coal daily by this operation of John Doe's, but that is a small matter.

WHAT THE SMALL MINE MEANS TO THE RAILROADS

John Doe calls upon the railroads for cars. The railroad is a common carrier and bound to furnish transportation to all shippers on equal terms. But the terms are not equal. The Mammoth Coal Mining Co. near-by ships 1200 tons a day. It built and owns its own siding, into which the railroad daily shifts a train of 20 to 30 cars and daily pulls out a loaded train of 20 to 30 cars. John Doe's car must be placed on a siding used for general merchandise. To get the car in a position to be loaded from the farmers' wagons, the freight engineer must shift out six cars of merchandise lying on the siding and, after placing John Doe's car, shift these merchandise cars back, doing twice as much work handling this one car for John Doe as in delivering a whole train of empty cars to the Mammoth company, and repeating the performance when the car is finally loaded and is consigned to the customer of John Doe.

If the weather is bad, the roads in poor shape for hauling, or from any cause the farmer teamsters do not all report for work or do not all work the whole day, more than one day is consumed in loading the coal, so the use of the car for one day is lost, or perhaps the use of the car for several days may be lost, and this reduces the ability of the railroad to haul coal to market. Perhaps John Doe may sell his coal before it is mined and thus be able to consign it direct to his customer, but if customers are offish as to price and if John Doe believes that by waiting a few days he will be able to find some consumer who "just must have coal" regardless of price, he ships the coal to Squeedunk, consigning it to himself, or to his agent, hoping that before it arrives at Squeedunk he can sell it at a satisfactory price and change the billing or re-consign the car to the new destination; but if he should not succeed, he can let the car lie at Squeedunk, paying demurrage on the car, and then have it forwarded to the new destination. By this procedure the company

may lose the use of the car for several days—but John Doe is pocketing a profit of \$40 to \$60 a day, so why worry?

The effect of John Doe's new coal-mining operation upon the railroad is to increase its operating costs, decrease its ability to handle coal and other freight, and lessen the average annual tonnage moved and mileage made by its coal cars.

THE JOHN DOE MINE BALANCE SHEET	
Credit	
By 40 tons per day of coal sold at a profit of \$40 to \$60 daily	
Debit	
To decreased tonnage of Mammoth Mine.....	65 tons
To loss of labor of one man shoveling coal into cars....	(?)
To loss of labor of eight farmers on farm work.....	(?)
To deterioration of farms.....	(?)
To loss on farm products not harvested.....	(?)
To wear and tear on eight wagons and eight double sets of harness.....	(?)
To depreciation in value of eight teams.....	(?)
To damage to roads.....	(?)
To loss on live stock not raised.....	(?)
To loss of value of grain, hay, etc., consumed by eight double teams.....	(?)
To decreased car service, loss by railroad.....	(?)
To increased operating cost, loss of railroad.....	(?)
To loss caused by interference with industrial use of railroad siding, loss by other shippers and consumers....	(?)
To increased cost of coal, loss by consuming public....	(?)

Coal Production in 1916

The table herewith shows by states the production of coal in 1916 and 1915 in net tons, the number of men employed during the same years, and the average number of days that the mines worked. It is adapted from a table that is arranged with the states in alphabetical

State	No.	1916			No.	1915		
		Quantity Tons	Employees	Days Worked		Quantity Tons	Employees	Days Worked
Bituminous and lignite:								
Pennsylvania	1	170,295,424	168,212	259	1	157,955,137	174,593	226
W. Virginia	2	86,460,127	78,067	237	2	77,184,069	75,882	208
Illinois	3	66,195,336	75,538	198	3	58,829,576	75,610	179
Ohio	4	34,728,219	41,394	197	4	22,434,691	40,053	142
Kentucky	5	25,393,997	31,222	208	5	21,361,674	27,960	186
Indiana	6	20,093,528	23,965	187	6	17,006,152	22,777	179
Alabama	7	18,086,197	25,308	262	7	14,927,937	22,591	223
Colorado	8	10,484,237	13,104	233	8	8,624,980	12,372	194
Virginia	9	9,707,474	9,777	272	9	8,122,596	8,959	235
Wyoming	10	7,910,647	7,255	248	10	6,554,028	7,244	201
Iowa	11	7,260,800	14,443	202	11	7,614,143	15,549	220
Kansas	12	6,881,455	12,132	204	12	6,824,474	13,260	184
Tennessee	13	6,137,449	9,211	239	13	5,730,361	8,948	220
Missouri	14	4,742,146	9,654	207	14	3,811,593	9,173	186
Maryland	15	4,460,046	5,633	236	15	4,180,477	5,664	242
New Mexico	16	3,793,011	4,522	292	16	3,817,940	4,205	262
Montana	17	3,632,527	3,781	244	17	2,789,755	3,158	201
Oklahoma	18	3,608,011	7,800	178	18	3,693,580	8,457	167
Utah	19	3,567,428	3,129	288	19	3,108,715	3,564	208
Washington	20	3,038,588	4,797	217	20	2,429,095	4,850	169
Arkansas	21	1,994,915	3,772	184	21	1,652,106	3,751	149
Texas	22	1,987,503	4,481	218	22	2,088,908	5,087	233
Michigan	23	1,180,360	2,535	216	23	1,156,138	2,569	198
No. Dakota	24	634,912	714	244	24	528,078	590	219
Georgia	25	173,554	411	280	25	134,496	368	187
Oregon	26	42,592	106	236	26	39,231	151	206
Alaska	27	13,073	83	179	27	1,400		
So. Dakota	28	8,886	38	145	28	10,593	35	155
California, Idaho, and Nevada	29	7,240*	18	188	29	12,503	36	285
Total bituminous and lignite		502,519,682	561,102	230		442,624,426	557,456	203
Anthracite:								
Pennsylvania		87,578,493	159,869	253		88,995,061	176,552	230
Grand total		590,098,175	720,971	235		531,619,487	734,008	209

*No coal was produced in Nevada in 1916.

order. This was issued by C. E. Leshner, of the United States Geological Survey, under date of Aug. 10.

The order of priority of the states is given for both years in columns, appropriately placed. It will be no-

ticed that the order of precedence is not changed for the nine leading states—Pennsylvania, West Virginia, Illinois, Ohio, Kentucky, Indiana, Alabama, Colorado and Virginia. Ohio is so far behind Illinois that there is no chance for it to assume its former leadership. Its large increase in tonnage, about twelve million tons, was quite inadequate to perform that trick. Besides, Illinois also increased its tonnage about seven millions.

Looking at the record of days worked in the table, it is easy to see how the tonnage could be increased. The average number of working days was only 230 in the bituminous regions. Casting out Sundays, there are 314 days in the year, or 84 more days than were worked. There were therefore over three months of mine idleness. Probably the working days of the individual men would run far less than 230, for the estimate is doubtless based on the running days of the mine. Men quite frequently absent themselves from the mine and even more often work short days.

The anthracite region worked nearer capacity, as the mines ran 253 days out of the 314 actual weekdays in the year. Deducting 11 days for generally observed holidays leaves 303 days in which the mines might work. Evidently, under pressure, the mines could be expected to run at least 50 more days per year. Unfortunately, in the anthracite region, strikes are of frequent occurrence. Idleness from lack of equipment is rare, but button strikes are only too common.

It will be noticed that while there were 26 more days worked in 1916 than in 1915, a gain of 12.44 per cent., there was a loss in the number of men of 13,137, or 1.78 per cent. The tonnage, however, increased 58,478,688 net tons, or 11 per cent. The number of bituminous coal-mine workers increased by 3646 persons, or 0.65 per cent., whereas the force at the anthracite mines decreased by 16,683 persons, or 9.45 per cent.

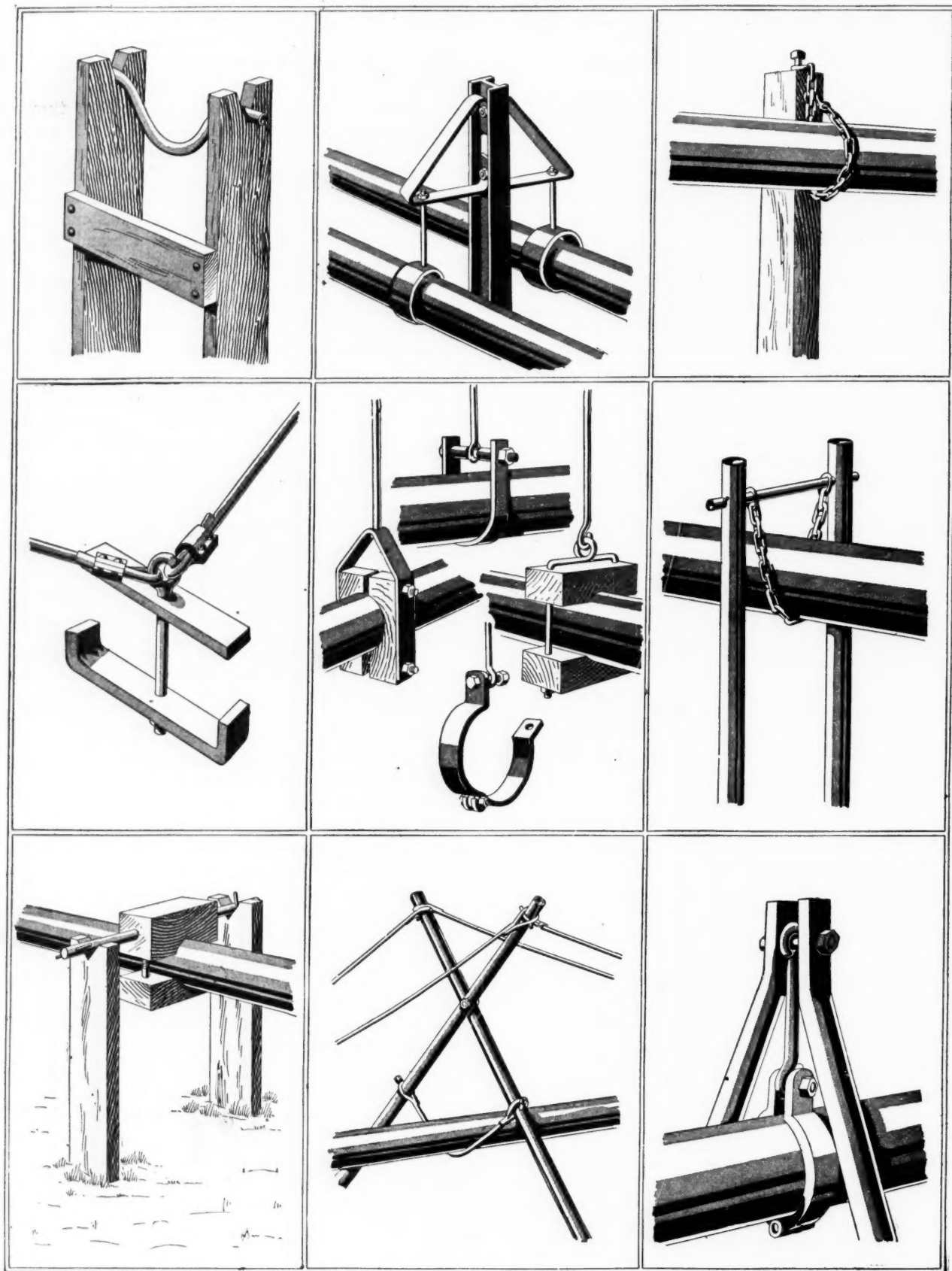
Wood Material in Coal Seams

To those in the West Virginia Coal Mining Institute at its last session who doubted whether recognizable carbonized wood was ever found in the actual coal substance, the following remarks from Franke's "Handbook on Briquetting" will be interesting. It applies, however, to lignite. Commenting on an illustration, he says:

"In the middle section of the coal seam, almost in the center of the stratum, is to be seen an upright massive stump of a tree (bog cypress) which has been uncovered. Such stumps are found frequently during the working of the seam, but usually in a horizontal position. In such cases they are usually of considerable girth and they then lie close together, a proof that they are of autochthonous origin—that is, were deposited from a swamp forest which grew on this spot. In addition to the woody matter in the vertical tree stumps, other remains of plants, more or less well preserved, occur in a horizontal position, often forming shaped layers.

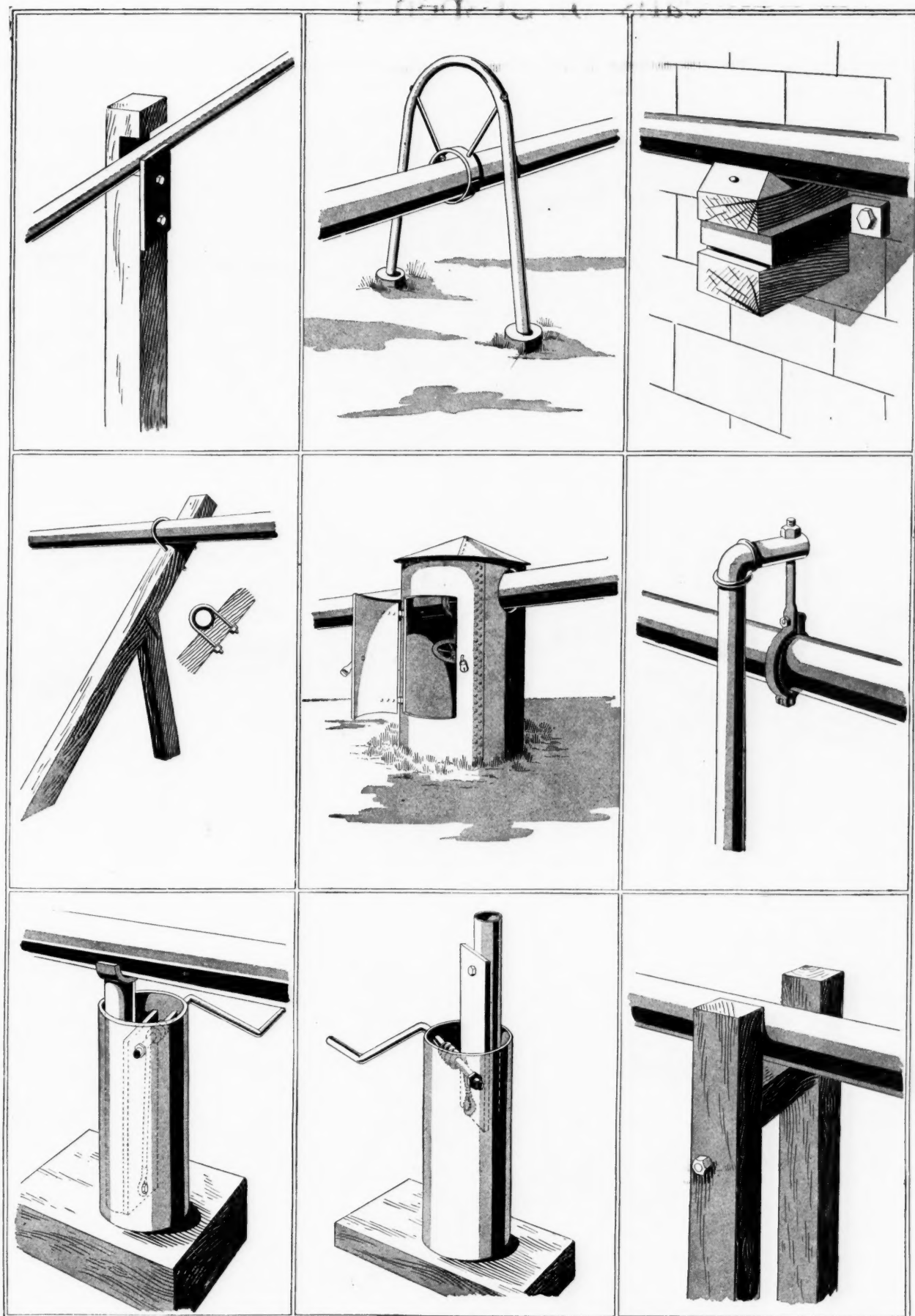
"During the working of the seam all material which cannot well be handled because of its woody character is carried to a heap in the bottom of the working and given to the workers for fuel wood. Small pieces of wood are, however, mined with the coal. After suitable crushing, the soft, coally particles can be briquetted, but the heavier pieces are passed on to the boiler house."

Means of Suspending Pipe



—From Engineering and Mining Journal

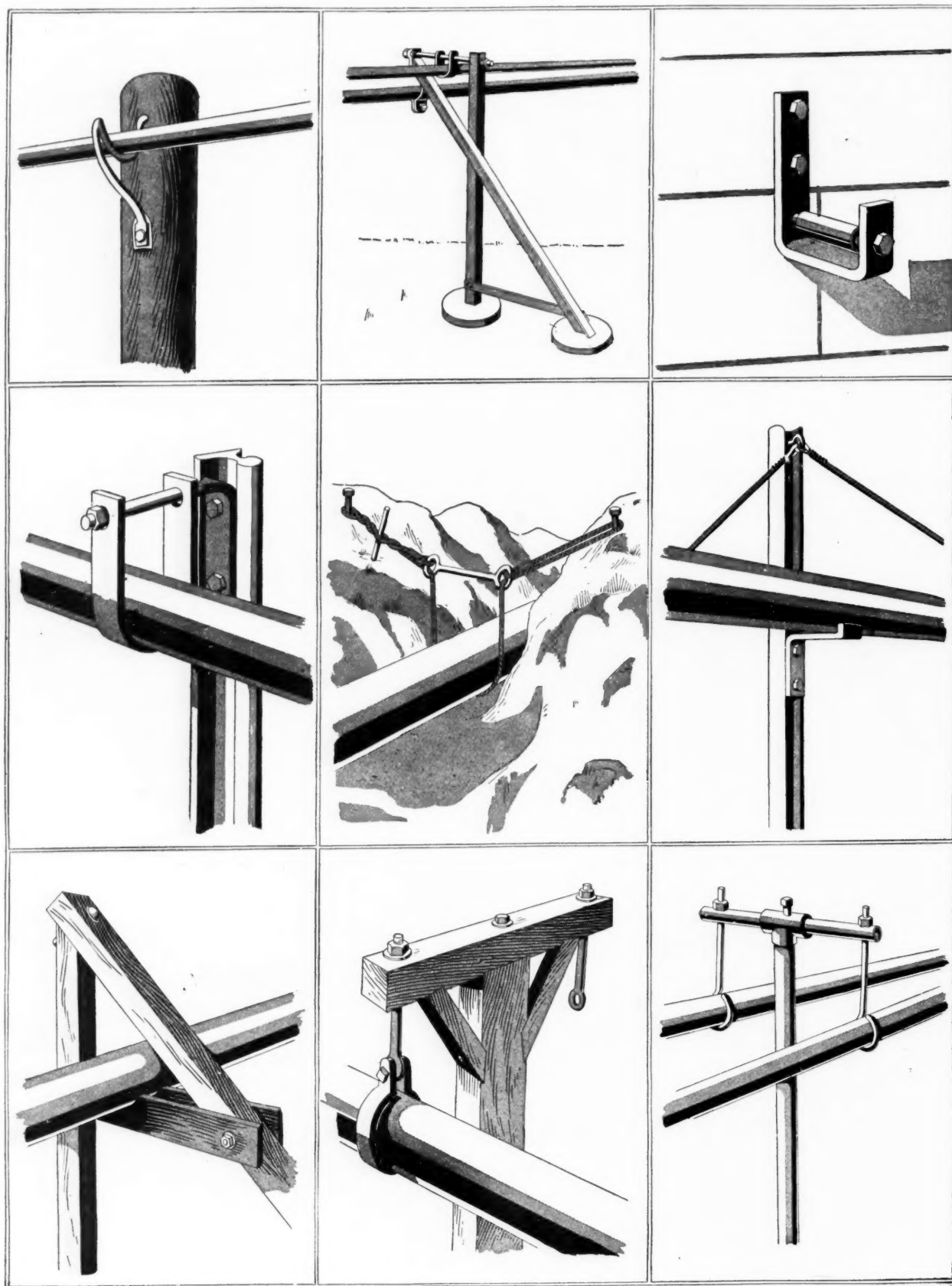
AT MINES MANY METHODS ARE USED FOR SUSPENDING THE LARGE AMOUNT OF



—From Engineering and Mining Journal

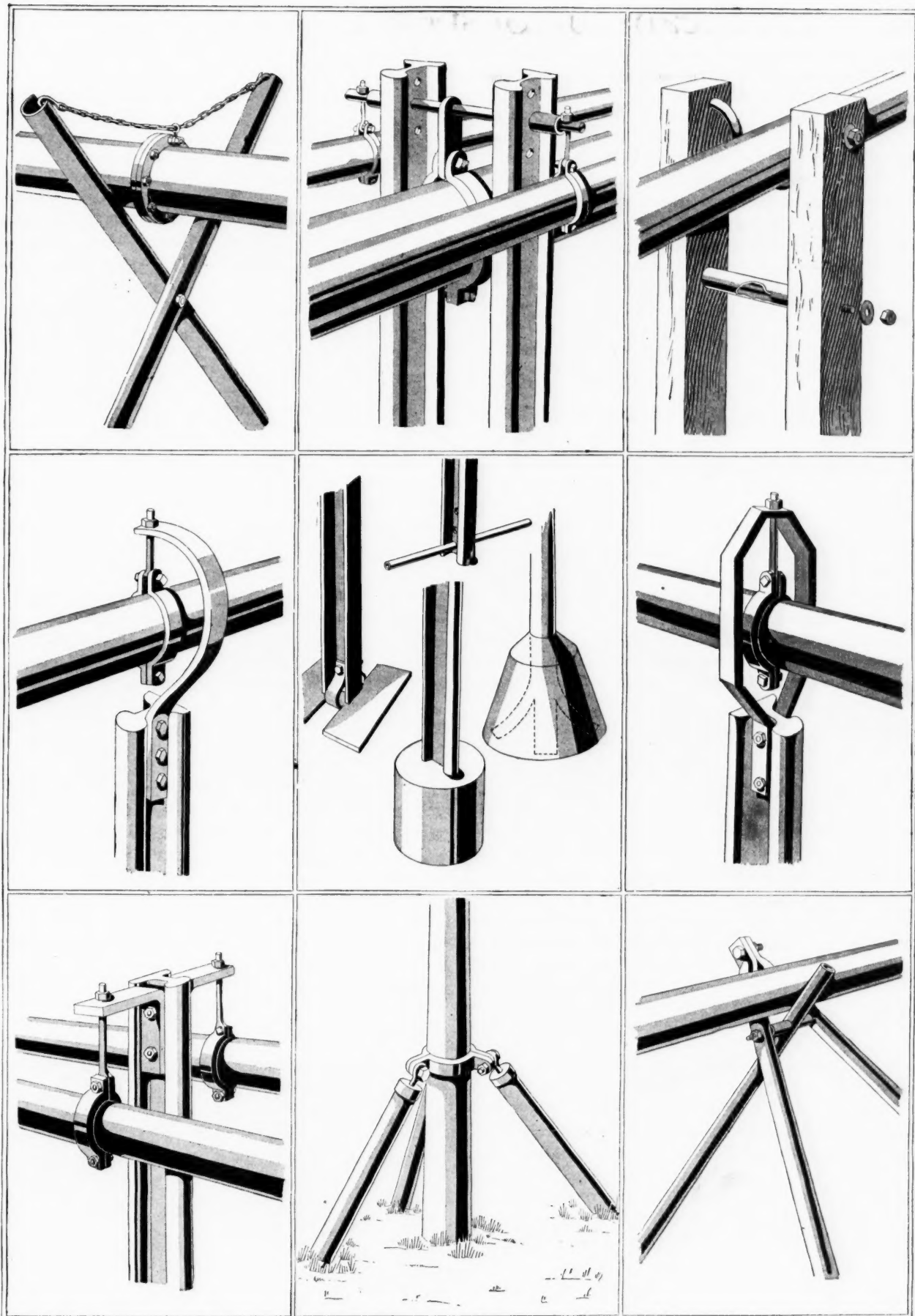
PIPE REQUIRED, THE PARTICULAR SCHEME ADOPTED DEPENDING UPON CONDITIONS

Means of Suspending Pipe



—From Engineering and Mining Journal

THESE PAGES SHOW THIRTY-SIX SCHEMES FOR PIPE SUSPENSION AND MAY



—From Engineering and Mining Journal

SERVE TO GIVE USEFUL SUGGESTIONS FOR MEETING ANY SET OF CONDITIONS

Anthracite Mine Foremen's Certificates Will Be Issued

In recent years much controversy has been aroused in respect to the issuance of certificates of qualification to mine-foremen candidates in the anthracite region who have been examined by the board of examiners appointed annually by the court and who have received the recommendation of the board.

Under the previous act of June 2, 1891, the Secretary of Internal Affairs was directed to grant a certificate to "every applicant who may be reported by the examiners . . . as having passed a satisfactory examination and as having given satisfactory evidence of at least five years' practical experience as a miner, and of good conduct, capability and sobriety."

By the act of Apr. 14, 1903, establishing a Department of Mines, in Pennsylvania, the chief of the Department of Mines is directed to grant a certificate of qualification to each applicant who has passed a successful examination, as reported by the examining board. This later act repealed all parts of previous acts inconsistent with its provisions.

WHY THE CERTIFICATES WERE WITHHELD FOR A TIME

By virtue of the authority bestowed on him as chief of the Department of Mines, James E. Roderick has felt constrained this year to disapprove of some of the recommendations made by the examining board and to withhold certificates from certain candidates recommended by the board. The contention of Chief Roderick, in these cases, is that it does not appear, to his satisfaction, that some of the candidates reported by the board have given evidence that they have had "at least five years' practical experience as a miner" in the meaning of the law.

A pronounced difference of opinion has been expressed in regard to the actual meaning of the word "miner," as employed, in this instance, in the anthracite law. Some claim that the term refers to a man who has spent at least five years in performing any practical work underground and relating to the daily operation of the mine. But, inasmuch as this construction of the law might include, within the meaning of the term "miner," an underground timekeeper, surveyor, driver or stable boss having no practical knowledge of the real work of operating a mine, Chief Roderick and others have felt that the term "miner," as used in the law, applies to one who has had at least five years' practical experience digging coal, which seems a more reasonable construction to place upon the term, in the interests of safety and efficiency in mining.

Acting conscientiously in the performance of his duty as he construed the law, Chief Roderick held up a number of certificates this year, refusing to accept the reports of the examining board until he had submitted the points in controversy to the attorney-general and received from him an opinion citing his construction of the law. In reply Mr. Roderick received from the attorney-general, July 20, the following statement:

"The third paragraph of art. 18 of the anthracite mine law reads as follows:

The term "mine" includes all underground workings and excavations and shafts, tunnels and other ways and openings; also all such shafts, slopes, tunnels and other openings in course of being sunk or driven, together with all roads, appliances, machinery and materials connected with the same below the surface.

"If, then, the term 'mine' as expressed in this Act of Assembly, embraces all underground workings, excavations, shafts, tunnels and other ways and openings, it must necessarily follow that a person who works in any of these places included in this definition is a miner within the meaning of the law.

"I do not think it was the intention of the legislature to limit the right of examination to a particular class of persons who work in the mines, but rather to include all classes of miners who have had five years' practical experience in working in a mine, as defined in the Act of Assembly.

"In view, however, of the conclusion to which we have come, this opinion is rather for the guidance of the board of inspectors than for the chief of the Department of Mines."

Referring then to the act of 1891, the attorney-general quotes from sec. 2 and 4 of art. 8, portions of that act still in force, as follows:

Certificates of qualification to mine foremen and assistant mine foremen shall be granted . . . to every applicant who may be reported by the examiners . . . as having passed a satisfactory examination and as having given satisfactory evidence of at least five years' practical experience as a miner and of good conduct.

Turning then to the act of 1903, the attorney-general quotes from sec. 7 as follows:

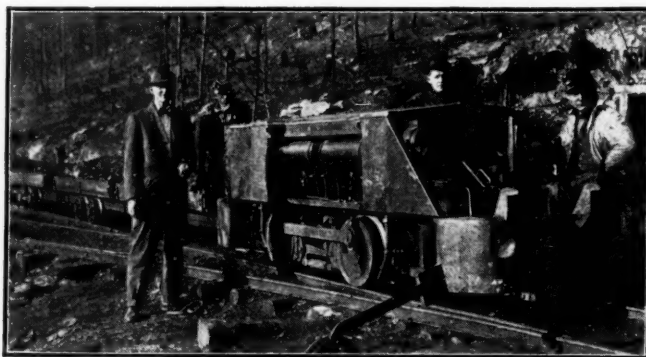
Certificates of qualification to mine foremen and assistant mine foreman in the anthracite mines . . . shall be granted by the chief of the Department of Mines to each applicant who has passed a successful examination.

In view of these citations of the law, the attorney-general expresses his opinion in brief as follows:

"The board of examiners is composed of experienced, practical miners. It is a tribunal that, under the law, is to determine whether the applicant has given satisfactory evidence of at least five years' practical experience as a miner, as well as the fact as to whether the applicant is of good conduct, capability and sobriety.

"When the board of examiners finds these facts and properly certifies them to the chief of the Department of Mines, the chief of the Department of Mines has no further duty to perform than to issue the certificates of qualification to the mine foremen, as recommended by the board of examiners."

Acting in compliance with and under the authority of this opinion of the attorney-general, which relieves the chief of the Department of Mines of his responsibility in respect to the construction of the law, Chief Roderick will issue the certificates of qualification that he had previously withheld to permit him to secure this confirmation of the action of the examining board.



NEW GASOLINE HAULAGE LOCOMOTIVE OF THE SLOSS-SHEFFIELD STEEL AND IRON CO., BROOKSIDE, ALA.

Editorials

Does Coal Shortage Near an End?

IN IOWA, it is reported that in the week ending July 21, 1 per cent. of the mine capacity was shut down for want of orders. The next week 6.3 per cent. was idle and the week following 7.1 per cent. The figures are those given by C. E. Leshner, of the United States Geological Survey.

In Indiana, in the week ended Aug. 4, there was a shortage of orders of 0.1 per cent. of capacity. Everywhere else there was no shortage of this kind, though the tonnage throughout the country in the last two weeks mentioned was 24.3 per cent. below capacity, 13.7 per cent. being due to car shortage, 5.9 per cent. to labor shortage and strikes and 3.6 per cent. to "mine disability—the mines being shut down for repairs."

Of course, it is hard to evaluate this shortage of orders in Iowa. We do not know whether the Iowa operators were holding back for schedule prices. To do so would be wrong at this present juncture, when it is necessary to produce the maximum tonnage in order that the ability of the railroads to ship coal may not be restricted in any way. However, it seems somewhat hard to condemn operators for seeking to get the schedule price. To do so is to ask them to accept the law of supply and demand when it injures them and to repudiate it when it would work to their advantage.

Possibly the hope that lower prices would be ordered by the Federal Trade Commission or the promised dictator of coal prices had some influence in the matter, buyers being little desirous to purchase when there was a prospect of lower prices being ordered. But, in any event, it seems as if the pressure for coal was not so severe as it was a few weeks back and that the pressure was based not so much on the increased use of coal as on the panic of the consumer and on the extensive storage of fuel.

Iowa lies near the West, where coal is scarce. As *Coal Age* has pointed out many times, the Western production has been hamstrung by the United States Geological Survey and by successive Secretaries of the Interior. Much coal that was opened and working was closed down by the Attorney General's department, which condemned the manner by which the lands were acquired. The tonnage could be rapidly increased were the present Attorney General to see a new light, provided also that the needed labor were forthcoming.

Another trouble in the West has arisen from the high prices placed on the public coal lands of that region by the United States Geological Survey. New mines are scarce, and now that the production of oil fuel is reduced—and this is also partly due to unwarranted Governmental interference—the tonnage is sorely needed.

Iowa might provide for some of this loss, as the Geological Survey well remarks when it says that "the existence of free coal so near the seat of a threatened scarcity in the Northwest deserves the attention of consumer and dealer alike." The Survey does well to feel solicitous about the Northwest, which is suffering from the excessive coal-land valuations of the imaginative geologists employed by that bureau.

Robert S. Lovett's first priority order is directed to the pressing needs of the great Northwest; but it is not in Iowa, apparently, that he is seeking an answer to the problem of that region, for its railroads are not among those which are directed to give preference to Northwest shipments.

Whose Is the Greater Fault?

LEVY MAYER, the attorney for the State of Illinois, said at a public hearing on the price of coal that screenings were sold at 37½c. in September, 1915, and that July, 1917, saw the same coal sold at \$2.25 a ton, an increase of 600 per cent.

Even conceding the small degree of responsibility we require of attorneys arguing their case, one would think that Mayer would be ashamed to produce such evidence. He had just stated that coal could be produced at a certain mine in May of this year at \$1.41. Probably this was a mine of more than ordinary efficiency. He had declared that coal cost 35c. a ton more to produce in 1917 than in 1915. That being so, the cost he gave would have been \$1.06 in that year. The United States Geological Survey makes the average selling cost in Illinois for 1915, \$1.10 per ton.

Now, if it is dishonest to sell coal at \$2.25 which costs \$1.41 and make a profit of 60 per cent., how much more dishonest it is to buy coal at 37½c. which costs \$1.06 to mine, the cost of production of which is 182 per cent. more than the price realized?

Mayer could have made his figures more startling, for there are places where screenings have sold for 10c. a ton f.o.b., and there are other places where brought to market they were sold for far less than the cost of the freight. But every attempt to condemn the coal industry by such arguments can only condemn the manufacturers the more severely and reflect also on Levy Mayer, for many years counsel for the Illinois Manufacturers Association.

Our private opinion is that it is not morally wrong to buy screenings below cost or to sell them above cost. What is wrong, is for a man to be a special pleader and argue a case in a way which he knows leads to an unjust conclusion. However, it is a waste of time to try and uplift some men in the legal profession or correct their moral code. Many lawyers though strict and

exacting in some ways have a professional ethics that is accommodating enough in others.

The state councils of defense are fast proving the tools of certain special interests. They are too often councils of offense, condemning others for an astuteness in business far less pronounced than their own. If their purposes are no better than those of the Illinois council, their terms should be short and inglorious.

The Government has shown its depreciation of Levy Mayer's argument by putting a price of \$1.70 on screenings, which is higher than Mayer's quoted price of 37½c. by 353 per cent. The decision will not please the users of slack coal who have been expecting to be allowed their privilege of buying coal at half or one-third cost.

Imitating Great Britain's Blunders

WE are taking awful warning from Great Britain's blunders—at least we say so, somewhat too unctuously at times. Perhaps we do not know, however, just where she has blundered—nor perhaps does Great Britain know herself. Perhaps we are going to blunder more seriously than she has by hastening too readily to approve her decisions or at least to imitate the conditions forced on her by the importunity of special interests, prolecratic and plutocratic.

When the war began many industries in Great Britain began to make large profits. All those who made larger profits than usual were compelled to pay higher taxes than others—which was surely wrong. The fact that they made large profits was a sign that their work was wanted. That others made small profits was a sign that their work was not wanted. The economic discrimination should have been allowed to work. We may object to the "survival of the fittest" in regard to human bodies, but not with regard to industries. Tax all alike—the new-rich no more than the old-rich—and then economic law will do its perfect work.

The large profits put a burden on the workingman. Yet he was not told any too plainly he should accept his burden in the war. He got to thinking that this burden was all for the man in the field and should not affect him at all. But surely he should be willing to suffer with the rest.

Most workingmen are patriots, but with the voluntary system of recruiting you rid industry of patriots and leave the less patriotic at home, and they irk at restrictions. Steady work and work for everybody—male and female—does not satisfy them even though it fills the purse and provides nourishing food and comfort. They demand increased rates of pay proportioned to increased living costs.

With prices regulated and wages rising no one makes money and the taxation schemes fail. Only those who do not serve the war and so pay the lowest taxes are unregulated in their prices and unhampered in dealing with labor. So these people get along nicely. But they are the very people who we do not want to succeed. They minister only to luxury and are not wanted. Their profits do not go into war-worthy industry. They go into trade, manufacturing and dealing in vanities.

But a worse development yet took place when Great Britain borrowed money to lower prices to the workingman. Nothing could more speedily impoverish a nation. Victory Loan Bonds were expended to help the workingman buy more than he would otherwise buy—surely a perversion of good money.

One has all kind of sympathy with the workingman who objects to seeing the war won by large profits put back into industry and Liberty Bonds, but it is absurd to suggest that the private profits by which industry is speeded should be stopped. Government ownership of factories might replace private by public profit, but the Government, as mill and mine owner, too often only removes the profits in industry by removing the efficiency and in no other way.

Liberty Bonds are not without their own disadvantages. Fifteen billion of them in a year—and we are assured there will be no less—is a terrible brake on industry. Where they do not come from the savings of those who would otherwise be thriftless, they take money which should go into speeding up the industrial mechanism. It sounds unpatriotic, but it is true.

If then Liberty Bonds are a brake on industry, why not largely replace them by another brake—taxes? Taxes can do little if any more harm than large borrowings and they reduce profits and so satisfy the workingman. The manufacturer will then get only a small percentage of the profits he makes. Enough will be made to make him keep plugging away and to keep him obedient to economic law, which bids that he work efficiently and to effect something that the public desires.

The workingman seeing the burden of taxation resting heavily on the profits of the manufacturer and operator will be content. For the most part, the workingman is not unfair or unpatriotic. He will be well pleased to bear a portion of his war burden resulting from higher prices, if he sees that the onus is pretty generally spread. But if the profits are large and a large part are borrowed, and not seized for public use, from the manufacturer and operator the workingman will want an increasing part of them. And it is not well that he have them. They should go to the nation. Everyone during the war must pull in his belt.

Furthermore, low prices to the Government are not desirable. No one will want to do Government work if there is any discrimination. Tax all the well-to-do alike and all heavily—new-rich and old-rich indiscriminately—restrain prices only with the greatest of caution if at all; have one price for everyone, Government and people, and try and get Liberty Bonds from wage savings only. This seems the best way to conduct the war.

Coal prices are now fixed, and we forecast that they will please no one. The small consumer will worry because owing to freight and delivery charges he cannot get the schedule prices; the big consumer because screenings are not sold below cost; the wagon miner because the price is low; the concerns which have large contracts because they are penalized for their foresight, and the miner because the price set removes the argument for an advance in wage schedules next spring.

Department of Human Interest

Safety and First-Aid Campaign of the Union Pacific Coal Co.*

BY THOMAS GIBSON

Chairman, Bureau of Safety, Union Pacific Coal Co. and Superior Coal Co., Rock Springs, Wyo.

The slogan of the Union Pacific Coal Co., of Wyoming, in and around its mines, is "Safety, First, Last and All the Time." We have now reached the point where we believe that it is better at any time to have a delay than to risk an accident.

The reduction of accidents effected by our efforts, however, often seems discouragingly small compared to the effort put forth. About five years ago, the Union Pacific Coal Co., realizing the importance of this work, inaugurated a safety department, to investigate all serious and fatal accidents, and to devise ways and means for accident prevention. A chairman of the bureau of safety was appointed, that being my official title with the company. It has been my duty to organize safety departments at all our mining camps, the general organization being as follows:

MINERS AND MANAGERS MAKE PLANS FOR SAFETY

At each mine, a safety committee is found, composed of the mine foreman, assistant mine foreman, one day hand, and one miner. The addition of employees other than official to the safety board was deemed advisable, because it was thought that such men would be directly interested in this work and would endeavor to educate their fellow employees to observe the safety rules that had been adopted for their protection.

There is also at each camp a safety board for the surface workers of the company. It is composed of the master mechanic, the outside foreman and the electrician, with three employees who work on the surface. The duty of the committee is to investigate all accidents happening at the outdoor works of the mines. When an accident occurs in the mine, the mine foreman immediately gets his safety board together, because it has been found from experience that when an accident is investigated soon after it happens, many points can be brought out which would be overlooked if a long interval of time elapsed before such investigation was made.

The idea of these investigations is to place the responsibility for the accidents, and to make such recommendations as may seem proper to prevent accidents of a similar nature happening in the future. There is also at each camp a general safety board, of which the mine superintendent is the head. This safety board meets once a month, and has a meeting at which safety conditions in and around the mines are discussed.

As chairman of the bureau of safety, it is my duty to make an independent investigation of all accidents,

and report to the general offices. The object of this independent inquiry is to bring out any points which may have been overlooked by the local safety board.

Many signs, in the different languages, have been put up in and around the mines, these signs being mostly in the form of instructions for the guidance of employees. All underground stables are lighted with electricity, and no open lights are allowed in them. All hay that is taken into the underground stables, as well as all therefrom, is covered with heavy brattice cloth, as a protection against fire while in transit. At convenient points along the main haulage roads, and at partings, hoistrooms, stables, pumprooms, and other places, liquid fire extinguishers are kept, in case of incipient fires.

One of the great aids to the underground official today is the telephone, as mines have become so extensive that the transmission of instruction by word of mouth is not now practicable. At all of our mines we have an efficient telephone system. Telephones connect the different parts of the mine, with suitable connections to the dump, engine room and mine superintendent's office, so that promptness and efficiency can be obtained in carrying out the work.

When ordering any new machinery, the specifications require that all gearing shall be properly guarded. All the old machinery not heretofore guarded has had suitable guards placed upon it and all dangerous places around machinery have been fenced in.

Precautions against fire are taken around the tipples and other mine buildings. There are hose connections to water plugs in the vicinity of all these buildings, and frequent inspections of the fire-fighting equipment are made by myself, the general mine inspector and the local officials at the respective camps.

In the more dangerous mines, where a lot of pillar work is being done, safety inspectors have been put on to patrol the working places, as it has been found that the mere fact of a mine foreman issuing instructions to employees to safeguard themselves does not always insure these instructions being carried out. Someone in authority must stay in the working places to insure proper observance of instructions; hence the desirability of appointing safety inspectors.

SAFETY IS NOT LEFT TO THE PRODUCTION FORCE

A general mine inspector is employed by the company, and he, with myself, makes an inspection of all mines of the company monthly. These inspection reports together with any recommendations which we may make are sent to the general offices at Cheyenne, and the reports are then sent to the mine superintendent, and his attention called to criticisms and recommendations. It has been found that this system insures that the remedy will be promptly applied.

At Cumberland and Hanna, which are classed as gaseous mines, only explosives of the permissible class are

*A paper entitled "What the Union Pacific Coal Co. of Wyoming Is Doing for Safety First and First Aid to the Injured," delivered at the summer meeting of the Rocky Mountain Coal Mining Institute, Glenwood Springs, Colo., June 20, 1917.

used. Shotfirers are employed to examine all holes before they are tamped. It is the duty of these shotfirers to see that the rules governing shotfiring are carried out. Only clay is used for tamping, and the shots, in most cases, are fired electrically. Only enough powder for a day's work is allowed to be taken into the mine, and this powder is taken in in fiber boxes.

We are arranging at Hanna to provide a lock for these small boxes, and to allow no one but the shotfirer to handle powder. The electric caps are also carried by the shotfirer, and these are only given out as required by him. Where company blasters shoot the coal after mining machines, and one blaster uses a considerable amount of powder in a day, this powder, during the day, is stored in concrete boxes, and the blasters are required to make a daily report showing the amount of powder at the beginning of the shift, and the amount at the close of the shift, to insure only enough powder being kept in the mine for the day's work.

In the Rock Springs field, where gas has never been found, and where the mines are classed as nongaseous, black powder is used exclusively. Many kinds of permissible powder have been tried out in this field, and used to some extent, but it was found that their shattering effect on the coal made their use undesirable. Practically all shooting in this field is done by shotfirers after the men are out of the mine.

At all of our camps, training stations have been established for first-aid and helmet work. These stations are lighted, heated and kept in repair by the company, and are kept open every night of the week. They are used to some extent as clubrooms by the men. We have been quite successful in our first-aid work, and several hundred men have been trained and are available should necessity require.

EMPLOYEES RUN THEIR OWN FIRST-AID CLUBS

It has been the policy of the Union Pacific Coal Co. to allow the men to have their own first-aid organization, and run it. They organize, with a president, secretary, treasurer and executive committee and charge small monthly dues. The company makes occasional contributions to their funds, although we do not pay any men for doing first-aid work, the work being entirely voluntary on the part of the employees. The results of the first-aid work have been quite gratifying since this organization, and great interest is manifested in it, but it has been found that the frequent practice of first-aid work alone will not maintain the interest, but that social dances and entertainments must be interspersed to keep matters running smoothly.

Many of our employees have obtained Red Cross certificates and Government certificates as well, for both first-aid and helmet work. The response to the helmet work has not been so gratifying, as many men object to using the apparatus. At each of our camps, we have four of the Draeger mine-rescue apparatus, equipped for mouth breathing. They seem to be much more in favor than the old-style helmet, being much cooler. We have also either a pulmotor or lungmotor at each of our camps in connection with this equipment, and while we have seldom used any of the equipment, we feel that it is good insurance to have it, and train men so that they can use it if necessary.

An annual field day has been established. This event was held last year in August at Rock Springs. About

two thousand men, women and children witnessed the event. Thirteen first-aid teams from the Union Pacific Coal Co.'s mines took part in the contest, and the winning teams were presented with suitable prizes.

We have an instruction car at Rock Springs, equipped like the Government mine-rescue car, with all equipment that might be necessary to take care of mine fires, or other serious catastrophes which might occur in the mines. The United States Bureau of Mines has been quite helpful, and has cooperated with us fully in training men in first-aid and helmet work. Whenever the Government cars reach our camps, it is always an occasion of much enthusiasm.

By the methods enumerated, the Union Pacific Coal Co., with all other progressive mining companies, is striving to cut down the number of accidents, and while the results are sometimes discouraging, we feel that it is a question of education, and that it is going to take time for the results of this safety campaign to be apparent. We feel, as no doubt many of you feel, who are in this safety movement, that more gratifying results will be obtained when the motives are better understood, and a heartier cooperation is obtained.

Regulating Open Hours of Saloon

Witherbee-Sherman & Co., of Port Henry, N. Y., on Lake Champlain, though an iron-mining company, furnishes interesting information of much value to coal operators regarding the effect of saloon regulation. The excise commissioner of New York State, with the consent of the governor, can issue an order limiting the hours during which liquor may be sold in the vicinity of war industries. One of the first orders promulgated regulated the liquid-selling hours at Mineville, N. Y., where hundreds of iron miners live.

The chart sent to the governor shows that before the order was issued it was the usual thing to have from 100 to 150 of the "underground" men of the company idle after each payday. The order went into effect June 18, and there was a payday June 20. There were more men working after payday than before. There have been two other paydays since then, and the chart shows that not more than ten men reported off duty on the days following.

Start First-Aid Meets on Pond Creek

The Pond Creek Coal Co. and the Tierney Mining Co., of Stone, Ky., recently held a joint Independence Day celebration and first-aid meet at the ball grounds at Stone.

This is the first attempt at a first-aid meet in this section, but it was well attended and a success from every point of view. Doctors Crockett and Moore, of the Pond Creek Coal Co., and Doctor Smith, of the Tierney Mining Co., acted as judges.

Three teams were present for the contest. First place was won by the Pond Creek engineers' team, the judges failing to detect a single error in their work. The individual contests were won by Captain Tom Mitchel, of the No. 1 team, and Captain Mosier, of the Tierney team. The individual prize winners were rewarded with new carbide lamps and the winning team with a new outfit of overall jackets.

Discussion by Readers

Sinking a Shaft to Coal

Letter No. 4—The answer given to the inquiry in regard to sinking a shaft that is to be concreted for the first 40 ft. of depth from the surface was good. In the same connection, I may be allowed to make the suggestion that it would be well, in sinking this shaft, to provide suitably for the foundation of the headframe, or superstructure, that must be erected over the shaft.

The operation of hoisting always produces strong vibration in the headframe, which is transmitted to the foundations, and if these have not a solid bearing, the pressure exerted may be sufficient to destroy the concrete curbing of the shaft. In order to avoid this trouble, allow me to suggest that the thickness of the concrete curbing should not be less than 8 in., at a depth of 40 ft. from the surface.

Referring to the accompanying figure, which shows a section through the upper portion of the shaft, I would carry the concrete curbing, having a thickness of 8 in., from bed rock to within, say 10 ft. of the surface. At this point, I would increase the thickness of the concrete, on the back side, a full foot; and continue to make the same increase of a foot, on the back side, each foot of height, until the surface was reached, keeping the face of the curbing flush with the inside dimensions of the shaft. This would make a solid concrete foundation all around the shaft and extending 10 ft. 8 in. beyond the line of the curbing.

In my experience, I have found that the use of wire, say $\frac{1}{4}$ in. in diameter, Pittsburgh steel, embedded in the concrete, gives better results than iron rods, rails or other shapes. For this reason, I would encircle the shaft with such wire, each 6 in. of depth, from the rock bed up to the surface. I have indicated this, in the figure, by small dots in the cross-section of the curbing.

There is one other consideration that I would like to mention before closing. It is well known that where a seam of clay is struck in sinking a shaft, this may cause considerable trouble, later, by swelling when wet. The pressure of clay in swelling is so great that no timbers can withstand the strain. In such cases, a close watch should be kept of the curbing, and if any bulging is observed, sections of the curbing should be removed at that point and the clay seam taken out for a few feet back from the shaft. The roof above the clay seam

must be supported by posts set upright around the shaft, in the usual manner. This excavation should be closed by inserting new timber for the curbing. A manhole should be left, however, so as to enable a man to enter the excavation and clean it out, from time to time. I hope these suggestions may be of help to those who are sinking shafts.

C. MCMANIMAN.

Rawdon, Que., Canada.

Haulage Economies

Letter No. 2—I am mine foreman at a shaft mine where the coal is overlaid with from 450 to 800 ft. of cover. This mine is practically a sump or drainage basin for the workings of an adjoining mine owned and operated by the same company. The other mine produces about half again as much coal as we are putting out.

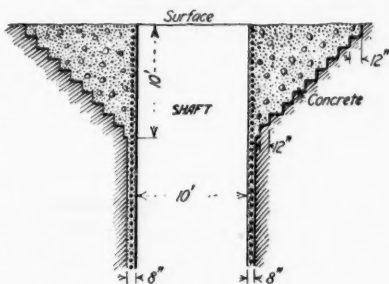
For some time past I have been impressed with the great lack of economy in the plan adopted by the engineers, who installed an engine-plane haulage for handling the coal in that mine. The conditions in the seam were such that it would have been far cheaper to have employed a self-acting incline by which the coal would have gravitated to our basin and could then have been hoisted at the old shaft. This plan would have eliminated the necessity of employing power to hoist coal up the incline, as the descending loaded cars would have pulled up the empties.

The plan adopted was probably worked out by experts who were not limited in their expenditures and whose idea was to develop a plan of systematic haulage, regardless of the natural conditions in the seam. Consider for a moment a company spending thousands of dollars each month for power to hoist their coal to the surface at a point two miles farther from the market, when that coal could be run by gravity to the foot of the shaft and hoisted to the surface. The money thus saved could be used to good advantage in developing the large coal tracts that the company is about to open.

REASONS FOR EMPLOYING MIXED HAULAGE IN MINES

In this connection, I want to indorse what D. L. C. has said in his letter, *Coal Age*, July 14, p. 69, in favor of employing mixed haulage. It is quite true, as he states, that "a mixed haulage system will produce coal cheaper than an absolute mechanical haulage." My experience is that, in a large mine, no one system of haulage can be considered as efficient under varying conditions.

In almost every mine, there will be places where the coal can be lowered from the working face to the gangway best by hand or man power. Again, there will be sections of the mine where mules will serve better for gathering the cars than any form of mechanical



SECTION SHOWING CONCRETE FOUNDATION OF SUPER-STRUCTURE AT TOP OF SHAFT

haulage, while the latter will generally prove more economical for use on the main roads.

The development of a mine, or any section of it, is much like the development of a garden, which can be worked by hand until it grows to be a farm, when it becomes necessary to employ animal power and, later, mechanical means for planting and harvesting. The same principle applies to the development of a mine; man power is first supplanted by animal power, which is again replaced by mechanical power, as conditions require; and in every case these must govern the system of haulage adopted.

Experience and observation convince me that, in nine cases out of ten, the adoption of a single method of haulage, under all conditions, will prove an absolute failure. In my opinion mixed haulage in mines is the only means of obtaining the greatest efficiency. It has often been proved that to employ mechanical power too largely has been a stumbling block, because it is too often wasted and put to a wrong use, as in the instance I have mentioned, where the coal was hauled uphill instead of letting it gravitate to the basin.

—, Penn.

EXPERIENCE.

Bossing and Being Bossed

Letter No. 2—The most valuable asset that any mine official can possess, under any industrial conditions, but particularly those of the present time when the scarcity of labor is a prominent factor, is the ability to handle men in such a way that they will continue to be satisfied with both their work and their pay.

It may be argued that, "if workmen are paid a sufficiently high wage, they will be content to work under conditions that are not up to their standard of requirements or are not such as they would choose." This would be true if the worker was actuated by avarice alone, which is not often the case.

Between the worker and his boss there is always a silent, undefined influence by virtue of which many will continue to work under conditions not to their liking, while others, by reason of the same occult influence, become less restive under conditions that are all one could ask. The human element is erratic and cannot be accurately gaged. Conditions under which one man will remain passive, if not wholly submissive, will produce in another a spirit of rebellious activity.

Every man possesses a personality all his own, which, as an armor, encases him. In every instance, however, there is a weak point that makes the individual vulnerable. To discover this weak point in the worker is the aim and purpose of every successful boss. This will often require a close study of the man's character and disposition. Tact and diplomacy must be used if these varying traits and characteristics of men are to be utilized to the best advantage.

While the desire to earn a competence is a well-established principle, in every honest worker, this desire does not form the controlling element in every case. Many have a desire to stand well in the opinion of others and are vulnerable to flattery or merited commendation and praise. Many long for the sincere appreciation of their efforts by the boss under whose instructions they work. Again, others have an ambition to succeed and gain a

higher position in their calling. A large class of honest workers are reached only by kindness.

The value of the worker to the work in which he is engaged is largely determined and developed by the ability of the boss to discern and appreciate his traits and characteristics, and to employ this knowledge to the best advantage in producing results.

My personal experience has taught me that the first essential of a successful boss is to gain and retain the respect and confidence of his men, through fairness and a high regard of individual rights, by displaying no favoritism but giving every man a square deal and keeping one's promises. Men will not fail to respect and obey a man who manifests these attributes, which tend to develop loyalty and cooperation on the part of every worker.

I. C. PARFITT.

Johnstown, Penn.

Favoritism vs. Discipline

Letter No. 2—Being in a position to know the actual facts in the case referred to by "Rixey," *Coal Age*, Aug. 4, p. 211, kindly permit me to explain the true situation, in the interest of justice. As we all know, there are always two sides to every question.

It is against the regulations, at this mine, for men to steal rides on the motor trip, and the matter has been up once or twice. In the instance referred to by Rixey, the assistant foreman claimed to have caught a man riding on the motor trip. The mine foreman happened to be in that section the same day and the assistant reported the matter to him, stating that when he told the motorman to put the man off, he received the reply, "Mind your own business."

EVIL EFFECTS OF TELLING AN UNTRUTH

The mine foreman had found, in one or two previous instances, that this assistant foreman was not careful to tell the truth; and, being anxious to know the exact facts in the matter, he asked the assistant to come with him and see the motorman, at the same time stating that he would not allow anything like that to go on and whoever was wrong would have to quit. As in former instances, the assistant's answer was that he did not wish to make trouble and would prefer to let the thing drop. In such matters, I know this young foreman to be very strict in finding out and punishing the one who is to blame, regardless of whether he is assistant foreman, dayman or miner.

The same day, on his way out of the mine, the mine foreman noticed a man on the rear end of a motor trip. Being unable to distinguish who the man was, he followed the trip to the bottom and ascertained from the switchboy his name. In speaking with the assistant foreman further on the subject, the foreman explained to him what he expected to do with this second man caught riding the trip, and the assistant expressed himself as wholly in favor of such action. The assistant knows these facts fully, and could have explained them in his letter but did not do so.

The next day, owing to lack of cars, the mine shut down at 9 a.m., and it so happened that the assistant foreman's son was caught riding out on the trip and reported to the foreman, who met him at the mine entrance and asked him if he had come out on the trip.

which the boy denied. The foreman replied, "All right, wait here until the brakeman comes out, and we will find who is telling the truth." When the brakeman appeared and stated before the boy that he was on the trip riding out, the lad made no reply and the foreman told him that he had no use for liars and he could consider his work at the mine as done, at least for the present.

The next day that the mine worked was Monday. That morning the foreman was discussing a little difference with the drivers, which really did not concern this mine, when the assistant foreman and his son appeared. The former, without waiting, broke in and demanded to know why his son had been fired. The reply of the foreman that he would talk with him after the men had gone in to work did not satisfy the man, who exclaimed loudly that he would not wait but would know at once what was to be done. The foreman then quietly replied by telling them both to go to his office and wait for their time, to which the assistant replied: "All right, I will get you. I have worked here sixteen years and never been fired before."

DISLOYALTY TO AN HONEST FRIEND

The plain facts, in justice to the foreman, are these: Both the foreman and this assistant are young men. Only a short time ago, when each was holding the position of assistant foreman in this mine, a difficulty arose that caused the dismissal of the other assistant. The man asked his friend to intercede for him, with the result that he was taken back by the foreman. The circumstance, however, proves the untruth of his statement that he had "never been fired before."

The first of last April, the foreman of this mine left and, although the other assistant foreman had been in their employ for sixteen years, the company sent for the assistant who is now foreman of the mine and gave him the place. At that time he had served five months as fireboss and more than a year as assistant foreman.

These facts are familiar to those acquainted with the parties, and I have stated them from a sense of justice to a young man who, in trying to help a friend, has received no thanks in return but has been misrepresented in his honest efforts to maintain strict discipline in the mine and award punishment for violation of rules, after ascertaining to his full satisfaction where the blame rested.

ONE WHO KNOWS.

Houston, Penn.

Importation of Chinese Miners

Letter No. 6—Referring to the suggestion of importing Chinese to work in the mines in this country, made in the Foreword, *Coal Age*, July 21, allow me to give, in few words, a miner's view of this question.

The needs of the war crisis demand a continued production of coal, iron, copper, lead and other supplies. These must be obtained from the underground storehouses, where nature has put them. The miner is the producing factor whose activities make it possible for the war to be prosecuted to a successful issue. He is the man that must be kept in his place, while the nonproducing classes must be utilized for defense.

Why should the suggestion be made, at this time, of introducing an element, into the mining industry, that would cause a "noise" that would not only be heard in

Washington, as suggested in the Foreword, but would sound from coast to coast.

The introduction of Chinese labor on the Pacific Coast should have taught a lesson worth learning. The miners of this country, though a large proportion of them possess little education, have rights that should be respected. They should be accorded just and fair treatment, and permitted to enjoy their proportionate share of the fruit of their labor.

By hard work and constant toil, the miner has earned the rights that are his, and the suggestion of displacing him in his chosen calling, at the very time when he is most expectant, will not be considered with favor.

The world little realizes how much it owes to the miner who toils below the ground. Upon his labor depends practically all the activities of man. For this reason alone, his calling demands consideration and the protection that will foster his goodwill and coöperation.

The glowing fires in costly halls,
The ships that plow the sea,
The heat that melts the cannon balls,
The light by which we see,
The lines of steel that bind the land,
The wires that race with time,
The magic touch of an iron hand
Hail from the miner's clime.

The glowing forge and the furnace fire
Serving the master's will,
The blazing hearth of the aged sire
Giving warmth and cheer to the fill,
The rushing train, the steaming barge,
The motor that drives the wheel,
All are fed from the miner's charge
Of powder, fuse and steel.

Beneath the ground, in caverns dark,
Shut out from the light of day,
The miner toils and toils; But, hark!
He sings, as a child at play.
Daring and brave, he fears no harm,
Thinks naught of the falling clod,
Forgets himself, knows no alarm,
His trust is wholly in God.—J. T. B.

Belle Sumter, Ala.

ONE OF THE TOILERS.

The Negro, North and South

Letter No. 6—I read "Southerner's" letter, *Coal Age*, July 28, p. 168, with as much amusement as he assumes the letters from the North, treating on this subject, are read by people in the South.

By way of disproving Southerner's contention that the negro on reaching the "land flowing with milk and honey" is disappointed, let me say that there is no evidence of this, by any noticeable exodus of the disappointed ones and their return to Dixie. Indeed, the fact that they remain at the North shows that they are well satisfied. Why shouldn't they be, when they are making good money and sharing equal advantages with the white people?

It is true that the negro is naturally credulous and ready to believe anything that is told him. But it is likewise true that he has found labor conditions in the North better than what he has known in the South, and he is quick to appreciate his advantages. The unscrupulous promises made him by labor agents that induced him to migrate to the North have not destroyed his faith in mankind, and the advantages gained in his new home have convinced him that the North stands ready to develop him and make him a useful citizen.

Let me pause here, to ask if the South has extended the same helpful hand to the negro race? Has any effort been made there to educate and train the negro and develop such qualities of usefulness as he is found to possess? To all appearances, no such attempt has been made. The Southern negro has never been trained to develop an industrial independence, but he has, been permitted, as Southerner admits, to indulge in a lazy, indolent life. He has been made to feel that he is a dependency of the superior white man.

DEVELOPMENT OF THE NEGRO, NORTH AND SOUTH

The Southern people have had 50 years, since the emancipation of the negro, to develop that class of workers and make them a factor that would, later, assume some of the burdens of civilization in the great Southland, whose industries form a leading part in the activities of the states. Instead of this, however, the tendency in the South has been to develop a land of faded glories and lamented aristocracies.

There are, of course, exceptions in the development and training of the negro in the North, as there are in other races. However, the negro miner is making good and proving himself to be a steady, industrious and efficient worker. Many negroes have come to be capable mechanics. Some are holding responsible positions in the Government, while others have established a thriving business of their own. Colored men have proved their patriotism in these perilous times by performing their share in the great service army of Uncle Sam.

The race riots that occurred recently in East St. Louis, of which mention has been made, are regrettable, indeed. They resulted from a prejudice growing out of the present acute condition of the labor problem. In such a crisis, the importation of any kind of labor, black or white, is an aggravating cause, but the results at East St. Louis are to be attributed largely to the lack of discipline in the ranks of those in authority.

Let me close by saying that while the North can make no claim to be "a land flowing with milk and honey," it does offer a good living and generally good working conditions to all classes of labor that do not assume to abuse its hospitality.

W. H. NOONE.

Thomas, W. Va.

Keeping Pace with Progress

Letter No. 1—It seems to me that there is no curse like that of a normal ratio of progress. Normal times and normal ratios have lulled us into a sort of lotus-eating frame of mind in which we appear to have a stolid satisfaction in mere increase of production; and we fail to scrutinize closely the elements causing the increase, with a view to ascertaining if we have utilized every means of progress that would afford a still higher record.

To rely on the mere multiplication of man and mule labor, as units in improving results, in this bustling age of mechanical devices, is to fail to keep pace with progress by utilizing the latest up-to-date methods and appliances. Opposition to change is deeply rooted in the average individual and seems to flourish to some extent in mining corporations.

The pages of *Coal Age* have teemed with improved mining methods and machines; and yet, we cannot close

our eyes to the fact that the adoption of most of these ideas and suggestions is far from being general. In the mines in many districts ancient and modern systems are both in use, while in others not even this compromise with progress is attempted and things continue to run in the makeshift fashion of 50 years ago. The "penny-wise-and-pound-foolish" policy is observed to control many operators, superintendents and foremen.

A striking illustration of these inconsistencies is to be found in many mines where chain machines have been installed to take the place of pick mining. Anyone familiar with the work of the machine, where it can be used in cutting the coal, knows the wonderful revolution it has wrought when other conditions have advanced in the same ratio of progress. I regret to say, however, that the increase of production, made possible by the introduction of machines, has in many instances been sadly handicapped by reason of the fact that the old methods of handling and transporting the coal from the face to the tipples have been retained.

MACHINE MINING AFFORDS RAPID DEVELOPMENT

Some time ago, *Coal Age* commented on the matter editorially (Vol. 9, p. 544) and quoted certain statistics to show that, while the use of machines was increasing in certain districts, the production of coal per capita was decreasing. The editor regarded this circumstance as not only anomalous but mysterious. A little reflection on the actual conditions existing in the majority of mining districts will convince one that the decrease per capita in production, following an increase in the use of machines, is only what could be expected.

To illustrate my meaning, let me refer to the actual conditions that existed in many of the coal mines of Michigan, which is one of the states mentioned as furnishing these statistics. In many of our mines, where machines had been introduced, no attempt was made to improve the haulage and hoisting arrangements, which remained practically as they were when the coal was mined by picks.

Now it is well known that mining machines develop productive territory much more rapidly than is possible in pick mining, and this reduces the quantity of explosives required to extract the coal. This latter feature insures the complete exhaustion of the coal where solid shooting would make that impossible. The combined operation of these two factors means more men, greater concentration of work and a larger daily production of coal.

OTHER IMPROVEMENTS MUST KEEP PACE

Consider now the loss of these advantages growing out of the use of machines when no improvement is made in the haulage and hoisting arrangements in the mine. For example, here is a mine that formerly employed 100 pick miners, with a production of 350 tons a day or $3\frac{1}{2}$ tons per capita. The introduction of machines in this mine resulted in the employment of 150 miners and increased the daily output to 450 tons, which was a decrease, per capita, of $\frac{1}{2}$ ton a day. In this case, an increase of 100 tons daily meant an actual decrease in tonnage per capita, owing to the handicap of inadequate haulage and hoisting arrangements. It is probable that the same conditions are largely true in every state from which these statistics were taken.

Now consider, for a moment, what advantage might have been derived in the mine to which I have referred, had the other necessary arrangements been improved so as to keep pace with the progress made by the use of machines. The 150 miners employed could easily have averaged 4 tons daily per capita, which would have increased the daily output of this mine to $4 \times 150 = 600$ tons, at the least computation.

These figures are eloquent and emphasize forcibly the need of "keeping pace with progress" in every department of the industry. This is particularly needful in the present crisis when a larger output of coal is demanded and the number of available efficient miners has decreased.

Let us look to the means of increasing every man's efficiency in the production of the nation's fuel as a matter of greater concern than the drastic expedient suggested by the discussion of enlisting the sinister hordes of the Orient to work in our mines.

Let me suggest that there is here a broad field for the exercise of men's talents who claim to be "efficiency experts." Let them employ their talents to unravel the tangle of new mechanical devices that is so perplexing coal operators at the present day.

Saginaw, Mich.

J. R. ALLARDYCE.

Opening a Mine

Letter No. 1—In reply to the inquiry of P. F. Carothers, *Coal Age*, July 14, p. 74, let me suggest the use of ton cars as being best adapted to haulage in a 3-ft. seam operated in connection with a self-acting incline 1000 ft. long, reaching from the mouth of the mine to the tippie.

Since the inquiry states that the length of the tippie is not to exceed 40 ft., a single trip should not contain more than, say, six cars. In order to handle an output of 400 tons a day, under these conditions, it will be necessary to make at least 66 trips each day.

DISTRIBUTION OF MINE CARS

I would suggest the following distribution of cars: A trip of six cars standing on the tippie; another trip of six cars standing at the knuckle at the top of the incline, ready to be lowered to the tippie; and, say two trips of six cars each on the inside partings, waiting to be hauled out of the mine. There should be, besides, a car at each working place ready to be loaded and another loaded and waiting for the driver to pull it out of the place. This would make a total of about 125 mine cars in use and undergoing repairs.

In regard to the kind and size of wire rope that should be used on the incline, I would suggest a 1½-in. steel-wire haulage rope. The "Monarch" haulage rope, manufactured by the Macomber & Whyte Rope Co., Kenosha, Wis., or the "Excelsior" rope, made by the Wright Steel Wire Co., Worcester, Mass., is a good rope for this purpose. With proper care and the use of a sufficient number of rollers for the rope to travel it will last 12 or 15 months.

In regard to mine cars, it is my preference to buy the trucks, wheels and binders or irons and build the cars at the mines, using for that purpose good well-seasoned oak lumber. The prices for these and other supplies can be best obtained by writing the manufacturers.

Crawford, Tenn.

W. T. HALE.

Uncertificated Mine Foremen

Letter No. 5—Being a certified mine foreman of Kentucky, I have been interested in the inquiry from that state raising the question as to what extent the safety of the mine will be endangered by the necessity of employing uncertificated men as mine foremen, should the occasion arise by reason of the war.

For one, I am strongly in favor of certified mine foremen, as I believe they are a safer class of men to place in charge of underground operations. In calling men to the colors for the defense of the country, it should be remembered that the success of the war is dependent on the coal industry as much as on the number and kind of men sent to the front.

EFFICIENT MINERS SERVE THE COUNTRY BEST BY THEIR WORK IN THE MINES

The increased demand for coal to supply the varied needs of the army and navy makes it not only important but obligatory that the best and most qualified miners should be kept at their work in the mines, where they can serve their country better than would be possible fighting the enemy on the field and in the trenches.

If the miners are to be drafted and taken from the mines in large numbers, not only will the output of coal be seriously lowered, but the accident rate in the mines will be increased by reason of employing men who are less acquainted with mining conditions. The history of coal mining in the past should teach the necessity of employing only fully qualified men.

It is true that there are states that do not require certified foremen to be placed in charge of their mines. Even the great mining state of Pennsylvania recently enacted a law making it possible to employ uncertificated men to act as mine foremen, provided they are equally competent with the certified men. But if the employer is left to decide the question of the "equal competence" of the man he selects for the position of foreman, who can say but that his choice will be prejudiced in favor of the man who has a "pull" or who is willing to work for less wages than a certified man?

While I do not think that a man who is able to pass an examination and obtain a certificate, because of his knowledge of the theory of mining, is more competent to manage a mine, I do believe that theoretical knowledge, in addition to practical experience, will give a man the advantage over one who must rely on his practical knowledge only.

There is no doubt that, as time goes on, the demand for coal will increase, and men having the widest knowledge and the greatest ability will be needed to guide the operations in the mines. For this reason it is my judgment that certified men should be exempt from the call to the colors and employed where they can do their most efficient work, in charge of a mine.

Only a few days ago the output of one mine in this vicinity was cut almost in half because the motorman in the mine gave up his work for the company and went to join the Navy. While such patriotism in our young men must be admired by all, reason teaches that a man's duty is better fulfilled when he remains at the post where he can do the most efficient work. Especially is this true when the work of an entire mine depends largely on the part he must play in its operation.

Herrin, Ill.

OSTEL BULLOCK.

Inquiries of General Interest

Convict Labor in Mines

Kindly permit me to ask if you can give me any information relating to the employment of convict labor in coal mining in different states. I understand that one of the states in the West and another in the South are, at present, utilizing convict labor in the operation of the mines. I may say that such a plan has had some consideration in Ohio, but its adoption appears to depend largely on what arrangements can be made with coal operators in regard to fixing prices at the mines. We shall very much appreciate learning what has been done in this direction in other states.

There are a number of valuable coal properties in Ohio that can be secured, but how far the present state laws would support such a proceeding is somewhat in doubt. For that reason nothing will be done in the way of securing title to these properties until the right of the state to engage in such a proposition is clearly determined. We believe that if some publicity was given to this question in *Coal Age*, it would lead to a discussion that would be of great value and assistance.

Columbus, Ohio.

H. S. R.

At the present time we can only cite a few instances where mines are operated by convict labor supplied by the state. Information is lacking, however, in regard to the specific arrangements under which these operations are conducted.

The State of Tennessee operates mines on an extensive scale, at Brushy Mountain, in the Knoxville district, employing for that purpose several hundred convicts. Detailed information in respect to the arrangements, in this case, can probably be obtained by writing E. C. Mahon, treasurer of the Southern Coal and Coke Co., Knoxville, Tenn.

In Indiana, Gov. James P. Goodrich is at present ruminating over a proposition to purchase a mine from which to supply the 25 or more state institutions—hospitals, asylums, prisons, etc. Before proceeding, however, the governor is anxious to see whether there will be any Federal action taken that will insure a more reasonable price for coal. If the mines are purchased by the state, it is proposed to use convict labor to operate them. The entire proposition is yet in embryo, as it is uncertain that any definite action will be taken.

There are no mines in Illinois, to our knowledge, that are working convict labor, and the same is true of Missouri. We understand that convict labor was formerly employed in some mines at Leavenworth, Kan., and these were operated under the auspices of either the state or Federal government.

The State of Alabama does not operate any mines of its own; but both state and county convicts are employed in a number of the coal mines, among which may be mentioned the Bessemer Coal, Iron and Land Co., at Belle Ellen, H. L. Badham, president, Birmingham. The company operates mines Nos. 2 and 7 with this

class of labor. All convicts of the state are under the jurisdiction of the Board of Convict Inspectors, P. J. Rogers, president, Montgomery, Ala. The parties mentioned will undoubtedly be glad to furnish specific information in reference to the terms of contract under which this class of labor is employed.

Mining Thin Coal

We have opened a first-class vein of smokeless and smithing coal. The seam is the upper Kittanning, C', and though of excellent quality, is only 32 in. in thickness at the most. The coal is underlaid with 10 in. of slate, about 1 ft. of hard fireclay and from 2 to 4 ft. of limestone.

We have experienced some trouble in holding our men, because of the thinness of the seam, which has made it necessary for them to push their own cars from the coal face to the tippie, and this has proved a source of dissatisfaction. At present, the coal is hauled, by trams, from the tippie to the railroad where it is loaded for shipment. This necessity, however, will shortly be obviated, as a railroad connection is promised and will reach our mine within a few months. The recent reduction in the price of coal has made it impossible to realize any profit in the operation, as we are obliged to pay a good price for mining, owing to the unfavorable conditions in the seam.

It occurred to me that the practical readers of *Coal Age* would be able to suggest a method of working this seam that would be profitable. The coal is soft and makes an excellent smithing coal, owing to its freedom from sulphur and other impurities. Its smokeless character also makes it a desirable domestic fuel. The chief hindrance in the mining of this seam is its thinness, which will require special arrangements in regard to handling the coal from the working face to the tippie where it is loaded for shipment.

I would like to ask for suggestions in regard to methods of conveying or hauling the coal in the mine. Any information or suggestions regarding a suitable method of working this seam will be greatly appreciated, as the proposition has puzzled us for some time and we are still without a solution.

New Florence, Penn.

H. J. WERDER.

In reply to this inquiry, we refer our correspondent to the excellent article, by J. F. K. Brown, entitled "Suggestions on Thin-Coal Mining," which appeared in *Coal Age*, Aug. 4, p. 190. Mr. Brown has gone into the working of thin seams of coal in considerable detail, and his suggestions should be both interesting and valuable. We hope, also, that *Coal Age* readers who are working under similar conditions will give us the benefit of their experience by making such suggestions as seem to them most applicable to the case presented by this correspondent.

Examination Questions

Illinois Mine Inspectors' Examination, Springfield, July 24, 1917

(Selected Questions)

Ques.—As mine inspector, how would you proceed to examine a mine so as to secure the efficiency and safety of the men employed?

Ans.—A new inspector, before making his first examination, should study the mines in his district and form the acquaintance of the mine officials. Assuming, however, that the inspector is fully acquainted with the mine he is to examine and has inspected the mine map so that he has a full knowledge of the ventilating system employed, the drainage of the mine and the extent of the workings, he should visit the mine unannounced and, securing an empty cage, proceed at once to the shaft bottom, where he starts his examination.

After a few minutes' delay, during which he has made casual observations and gotten his eyes accustomed to the dark, or "found his eyes," as the boys say, he proceeds at once to the foot of the air shaft and measures the volume of air passing in or out of the mine, as the case may be. If he is wise, he has taken mental note of the speed of the fan on first arriving at the mine and before descending the shaft, and he now compares the throb of the fan heard at the bottom of the air shaft with his previous observation, to see whether its speed has been increased.

Proceeding to examine the workings, he starts in by the mouth of the first section where he measures the air current passing into that district. He inspects, in order, each working place, talks with the men, listens to what they have to say, observes the condition of each place and gives the men any needed instruction. He again measures the air at the last crosscut in that section and makes note of any decrease by reason of leaky stoppings.

In the same manner he proceeds to examine each section of the mine, noting on his way the condition of all roads, aircourses, breakthroughs, or crosscuts and travelingways, giving special attention to the ventilation, timbering and drainage of every portion of the mine.

On reaching the surface, after completing his examination below and having inspected carefully the condition of the shaft guides, ropes, safety catches, cages, gates and other safety appliances, he proceeds to the engine room and inspects every detail of the hoist and talks with the engineer in charge. In like manner he visits and inspects the power plant and ends his examination by posting a notice giving the results of his observations and making such recommendation as his judgment and experience may dictate.

Ques.—How are the rocks of the Carboniferous Age distinguished from those of the Devonian period?

Ans.—An intimate knowledge of geology is necessary to distinguish between the rocks of different periods. The rocks of the Devonian Age differ mostly from those

of the Carboniferous Age in the fact that they contain only dark bands of carbonaceous matter, which, in the Carboniferous period, have developed into coal seams. Le Conte describes this feature of the Devonian as heralding the coal formations of the later Carboniferous period. The Devonian is characterized as being the age of fishes, while the Carboniferous is marked by the conifers and a higher development of the vertebrate animals. The predominance in most localities of a thick, coarse sandstone, styled by geologists the "Millstone grit," which forms the base of the Carboniferous system of rocks, marks the dividing line of these two periods.

Ques.—(a) On what does the force of an explosion depend? (b) What do you understand by the initial force of an explosion?

Ans.—(a) The force of an explosion is determined by the expansive force of the products of the explosion, or, as we say, the "number of expansions" in the gases produced. This depends on the amount of the gases and their temperature.

(b) The initial force of an explosion is the force due to the number of expansions in the gaseous products, and is equal to the atmospheric pressure multiplied by the number of expansions. For example, the explosion of a firedamp mixture, at its most explosive point, develops a temperature of 5840 deg. F., which produces, say 12 expansions in the gaseous products. The initial force of this explosion at normal atmospheric pressure, sea level, is then $12 \times 14.7 =$ say 175 lb. per square inch.

Ques.—(a) What is the object of oxygen-breathing apparatus? (b) Describe the type of oxygen-breathing apparatus with which you are familiar.

Ans.—(a) The object of the apparatus is to enable its wearer to penetrate an atmosphere of irrespirable gases, for the purpose of rescuing persons overcome by the gases, or performing other work.

(b) The candidate should describe the particular apparatus with which he is familiar. In general, all breathing apparatus consists of preferably two strong cylinders containing oxygen compressed to 120 atmospheres. Since it is estimated that a man performing hard work will consume 2 liters of oxygen per minute, each liter of tank capacity will supply sufficient oxygen for an hour's work in the mine. The oxygen tanks are connected with the helmet or, preferably, a nose clip, which enables the wearer to breathe the oxygen supplied from the tanks. There is a reducing valve, which controls and reduces the pressure of the gas supplied from the tank.

The carbon dioxide exhaled from the lungs passes through tubes to a regenerator containing hydrated lime, which absorbs the noxious gas. The action of breathing is utilized, on the principle of the injector, so that the exhaled air produces a slightly vacuous condition in the tubes that supply the oxygen. A check valve prevents the return of the exhaled air to the mouth. This, in brief, is the principle of all breathing apparatus.

Coal and Coke News

Harrisburg, Penn.

Transportation of coal and iron can be expedited by the increased use of the Pennsylvania canals, the War Department has announced.

By increasing the tonnage carried annually by the Lehigh Valley and Schuylkill Valley waterways, a solution of the problem of the freight congestion on the railroads to the Atlantic seaboard, is proposed.

It is said by the officials of the Lehigh Coal and Navigation Co. that the tonnage of the canal controlled by it could be increased many times with the acquisition of additional equipment. Similar results over the Schuylkill Canal can be obtained, according to the same officers.

With the two canals, traversing the coal and iron sections of the state, where many of the largest manufacturing plants engaged on Government contracts are located the additional shipping facilities provided by their extended use would materially relieve the transportation situation in the eastern part of the state.

Incident to the operation of the canals as general carriers the guarding of them will be taken over, it is said, by details assigned from the Naval Coast Defense Reserve. It has been suggested, according to the officers of the Reserve Corps, that ample protection of the properties can be secured through the organization of a patrol canoe fleet manned by the reserves.

Canal company officers decline to state if the Government had advised the necessity of increasing the canal service. It is thought, however, that the tonnage can be increased many times through the provision of additional equipment.

The principal objections to placing reliance on the expansion of the canals as a tonnage solution to the congestion of freight in transit, is the closure of the canals by ice during the winter months. Experts are working on a solution of this problem.

In the western part of the state extensive experiments on utilizing the dams to create a coal-boat stage when desired has been sufficiently successful to encourage the Federal engineers who made the tests, to announce that it will probably be possible to create such "artificial floods" every 10 days or two weeks for the movement of coal down the rivers in the Pittsburgh district.

Coal operators in this district have arranged a policy of cooperation with Government engineers so that advantage can be taken of the Federal engineers' proposal for a possible bi-weekly movement. If the program works out as successfully as the recent experiments and with any degree of regularity it will go far towards establishing river traffic on a stable basis. Undertaken under the pressure of wartime conservation of transportation facilities it encourages the hope of earlier realization of the aims of the coal operators who have long been championing the fullest utilization of interior waterways, one of the most valuable but most neglected natural assets in the bituminous coal district of Pennsylvania.

The land, use of which is given free by coal companies for the use of their employees in making war gardens, has yielded crops estimated to be worth more than \$1,000,000. These gardens are producing crops of potatoes, peas, beans, tomatoes, corn and various other vegetables. The average size of each garden, tilled by the miners, in most cases, is less than an acre.

Some coal companies made special arrangements in the spring to induce employees to take up unoccupied land belonging to the company and plant it for the purpose of assisting in increasing the nation's food supply. Many of the companies through their real estate departments worked out plans whereby an employee could without formality obtain the use of as much land as he could properly cultivate. In some cases a nominal rental was charged.

To encourage proper and scientific methods of cultivation, some of the larger com-

panies employed experts in the agricultural line to assist their employees in cultivating their gardens. Many of these experts were obtained from the state college. Many employers also furnished their employees with a copy of the Garden Primer, issued by the National Emergency Food Commission and also a copy of a booklet on potato culture, which was prepared by the Agricultural Department of Pennsylvania.

For many years James E. Roderick, chief of the Department of Mines, has endeavored to impress upon the operators and employees of the 2000 coal mines of Pennsylvania the fact that most accidents that have occurred might have been avoided, because they were due to causes susceptible to control. Statistics support his contention that at least 60 per cent of the accidents are due to carelessness and thoughtlessness.

In view of this contention, he has strenuously urged the addition of the most stringent rules governing the operation of the mines, and has urged with all possible force the necessity for the education of the mine employees, particularly in the use of the English language, believing that much of the carelessness and thoughtlessness arose from the inability of the employees to understand the instructions given them for their safety and protection.

"It is a matter of interest," says a recent statement of the Department of Mines, "to know that the entire industrial world has become a convert to the theory that carelessness and thoughtlessness are the most prolific causes of accidents and that they must be eliminated if accidents are to be reduced." An effort along this line has recently been made in the form of full newspaper page articles portraying the dangers that result from the two causes mentioned.

In this statement it is claimed that about 85 per cent of all accidents may be traced to carelessness and thoughtlessness and the injunction is given "Don't take chances." Rules are advanced covering many elements of danger that constitute a most impressive warning to all classes of workers to exercise the utmost care and vigilance. This public notice, plainly indicative of a widespread energetic and intelligent propaganda on the subject, has attached to it the signatures of the most prominent railway, mining, and manufacturing interests in Pennsylvania, and the dignity of the article, sustained by the eminent advocates of carefulness, is a confirmation of Chief Roderick's opinion regarding the most fruitful cause of accidents.

A big plot to restrict the output of coal from the mines of the Pittsburgh district is said to have been uncovered by Government agents, who on Aug. 18, arrested Nick Covice, 21 years old, an Austrian, alleged to be leader of a gang of enemy aliens who have been destroying coal tipples throughout western Pennsylvania for some time.

Covice was arrested on the charge of being implicated in the burning of the tippie at the Blaine mine of the Diamond Coal and Coke Co., at Lock No. 3 Forward Township, Aug. 11. According to Government officials who are working on the case, several other arrests are expected as a result of the big plot to hamper the operation of mines by destroying the means of transit that has been discovered.

Covice's scheme, it is said, was to short-circuit electric conductors in tipples. For several months tipples at western Pennsylvania coal mines have been destroyed by fire with alarming regularity. All of the fires have been of suspicious origin, and despite the efforts of Government agents and company detectives no inkling as to the perpetrators had been secured until Covice came under the scrutiny of the Government agents.

A furore was created among central Pennsylvania operators on Aug. 18, when a letter was issued by the Pennsylvania Railroad Co. to the effect, that hereafter, "in order to secure the delivery of coal necessary for operation of the Pennsylvania system the company will, until further notice, be obliged to utilize for such purpose all its available cars intended for bituminous

coal on Fridays and Saturdays of each week.

This action on the part of the railroad company, in the face of the serious shortage of rolling stock, has caused much discussion. On several days recently, it is alleged, there has been less than a 20 per cent supply.

The letter issued by the Pennsylvania in part is as follows: "In order to effect as wide a distribution as possible of the cars which it will have available on the days on which it will be necessary to use all cars for deliveries of fuel coal, the company is prepared to purchase and take coal from all operators desirous of furnishing the same, and invites tenders or proposals to furnish such coal deliveries on the two days named.

The available cars on the two days named will be placed at the mines of the operators whose tenders or proposals have been accepted.

Should the amount tendered at satisfactory prices exceed the capacity of available cars, a pro rata amount will be taken from each operator making such tender, the minimum amount, however, to be taken each day to be not less than the capacity of one car.

PENNSYLVANIA

Anthracite

Lykens—Rescuing parties, working continuously since Aug. 11, shortly before noon on Aug. 15, found the bodies of Lewis Shadle and John Chaurney, the two miners who were caught in a cave-in at the Short Mountain colliery. Six of the 8 men who were caught in the mine on Aug. 11, were rescued, but Shadle and Chaurney, who were farther back, could not be found. Almost 600 carloads of coal and rock were removed before the rescuing parties succeeded in reaching the bodies. It is believed both were crushed beneath the coal and died almost immediately after the accident.

Rendham—A new record was made on Aug. 13, at the Greenwood colliery of the Delaware & Hudson company, when 910 cars of coal were dumped. This surpasses the previous record of 1916 by nearly 300 cars. This record is regarded as an excellent one, for a small colliery and for an 8-hour day.

Wanamie—The Lehigh & Wilkes-Barre Coal Co. has now under construction two groups of modern homes for its employees. These building operations, which involve the expenditure of \$200,000, will provide accommodations for 80 families, as 20 double houses are being erected in each of the two villages, Lee Park and Wanamie. The buildings are of frame construction on concrete foundations.

Lansford—In order to meet the increased demand for anthracite everywhere over the East, the Lehigh Coal and Navigation Co., on Aug. 17, arranged to dredge all creeks into which deposits of fuel have been washed during past years from its collieries. This work will not be expensive and will yield, it is expected, a considerable supply of fuel.

Minersville—The Buck Run Coal Co. has commenced the construction of a new breaker to cost about \$500,000. The plant will replace the breaker recently destroyed by fire.

Two hundred of the 750 employees of the Lytle colliery have been drafted and Superintendent E. A. Van Horn has entered a protest with the Federal officials regarding this condition.

Edwardsville—The concrete foundations for the new Woodward breaker of the Delaware, Lackawanna & Western Coal Department have been completed, and everything is ready for the steel work to be erected. The production of the new breaker will be 5000 tons a day of eight hours, being a gain of 1000 tons a day. It is expected to be completed in a year.

Bituminous

Washington—The combination boiler, engine and oil-storage house of the Ardon mine of the Meadowlands Coal Co., was destroyed by fire at 5 o'clock on the morning of Aug. 16. The fire is believed to have been of incendiary origin and caused a loss of upwards of \$10,000. On account of the

machinery being destroyed the mine will be thrown into idleness for some time, and 350 men will be out of work.

Coral—The Potter Coal and Coke Co., that took over the Coral plant of the Wharton Coal and Coke Co. some time ago, has erected many new houses of the bungalow type for its workmen and is now improving the town by fencing each lot, putting in a new water and sewerage system, and improving the streets.

Connellsville—The estimated coke production in the Connellsville region, for the week ending Aug. 11, was 341,953 tons, of which furnace ovens produced 210,911 tons and merchant ovens, 131,042 tons. This compares with 207,787 tons and 127,286 tons, respectively, during the preceding week. Shipments amounted to 344,560 tons.

Black Lick—Vernon F. Taylor of Indiana, who recently purchased the operations of the Caldwell Smokeless Coal Co. near here, is opening a new mine near Heshbon, Indiana County. The operation will be connected with the Cresson-Black Lick branch of the Pennsylvania Railroad.

Bellevernon—F. R. Knight of this place has purchased a tract of coal land in Westmoreland County from S. C. Whipkey. Mr. Knight has not announced whether he will operate the tract himself or not.

Pittsburgh—Several operators of Pennsylvania and Ohio are offering prizes to their employees for steady work, large production, etc., in the form of Liberty bonds, watches and cash prizes.

Waynesburg—The Mathers Coal and Coke Co. has started sinking the shafts for its new operation at Jefferson, Green County. The mine openings, tipples, etc., will be located on the Moredock farm. The building of 50 houses is also under way.

Indiana—The Meco Coal Co., with operations near Indiana, has had more or less trouble with its men coming out on strike alleging short weight by the weighmaster on the tipples. The company has solved the problem by placing a young lady on the tipples as weighmistress. There has been no trouble since she has been at the new post of duty.

WEST VIRGINIA

Morgantown—The Brown Hill mine, which has been under construction for some time in the vicinity of Beechwood, recently loaded its first railroad car of coal.

Williamson—The St. Clair-Winifrede Coal Co., the largest new company in the county, will begin to ship coal shortly, and within 30 days will be shipping six to eight cars. About \$20,000 has been spent in the past three months in addition to \$50,000 formerly expended, and the operation is now considered modern and up to date.

Clarksburg—The car supply in the northern West Virginia fields was recently up to 100 per cent. This signifies that all the mines in the Fairmont-Clarksburg district had all the cars that could be loaded. This is a condition which has not prevailed for many months, and is full 40 per cent. better than the district has enjoyed within the recent past, and 50 per cent. better than the distribution for many weeks during the current year.

Charleston—Thirty-five persons lost their lives in the coal mines of West Virginia during the month of July, according to a recent report made by Earl A. Henry, chief of the State Department of Mines. Thirty-one fatalities occurred inside the mines and four outside. Ten deaths were reported from McDowell County, five from Logan, six from Fayette, two each from Kanawha, Marion and Mercer, and one each from Clay, Harrison, Mingo, Monongalia, Ohio, Preston, Raleigh and Wyoming Counties. Twenty of the deaths were due to falls of coal and slate.

KENTUCKY

Jackson—Coal operators of eastern Kentucky have appointed J. H. Hammons, W. W. Peavyhouse and Hugh Needham a committee to make preliminary arrangements for organization of an association. One of the purposes is to enable these operators to present a united front against what they characterize as unjust and unwarranted abuse by the newspapers which have been demanding reductions in the market price of coal. The usual objects of an association will be served, as well. A meeting the latter part of this month is proposed.

Whitesburg—It is announced here that the Detroit-Elk Coal Co. organized recently for a big development on the headwaters of the Kentucky river in the Elkhorn field will shortly establish a cement plant upon its properties to cost several million dollars—the construction of the plant to be

undertaken at once. Development of the coal properties have been delayed, but will be started now within a short time. This is a new industry to be undertaken by a coal mining company, and is quite out of the ordinary.

OHIO

Cambridge—A man using a moving picture camera, photographing scenes at the Walhonding mine of the Cambridge Collieries Co., and claiming to represent a New York motion picture company, was recently arrested by Chief of Police Long, of Cambridge, and Manager H. E. Cameron, of the collieries company. The camera and films were dumped into a creek by the chief of police. A constant watch on the mine properties has been maintained since America's entry into the war.

Athens—Suit has been filed against the Hysylvania Coal Co. by Ellis A. Lewis and others for \$7,109.60, for the alleged failure of the company to pay royalties on coal lands said to have been leased from the plaintiffs.

The high price of coal and the difficulty experienced by many consumers in securing fuel through the usual channels has encouraged the operation of "wagon mines," farmers and other land owners with coal on their property finding it profitable to haul fuel from their banks to the local market. Nos. 7 and 8 veins are those operated, and it is estimated that there are not less than 150 of these little outcroppings being worked in this vicinity.

INDIANA

Indianapolis—It is said that Governor James P. Goodrich will shortly issue a proclamation calling Indiana legislature into extraordinary session to legislate against "outrageous coal prices."

ILLINOIS

Springfield—Director Evan Johns of the Department of Mines and Mining, is gathering information for the annual coal report to be presented to Gov. Lowden. The mines of Franklin, Saline, Gallatin and White counties produced 16,081,829 tons for the fiscal year ending June 30, 1917. The figures show that the three largest mines in the southern Illinois field are the Old Ben No. 9, which produced 1,093,000 tons; the Bell and Zoller mines at West Frankfort, and the Ziegler mine, which produced 1,065,000 tons, and the C. W. & F. mine at Orient, Franklin County, which produced 1,800,000 tons. For the fiscal year Franklin County was operating 21 mines, in which 10,515 men were employed. The total output was 11,317,659 tons. St. Clair County shows the largest increase in tonnage. The mines of that county produced 5,712,775 tons, as compared with 3,315,600 tons in the previous fiscal year. The net gain in tonnage was 2,397,125 tons, or 72 per cent. The department is unable to secure satisfactory data as to the actual cost of coal production. It is said that a bill will be introduced at the next session of the Illinois legislature requiring operators to file such information at stated intervals.

Belleville—A movement has been started to have the state headquarters of the Illinois United Mine Workers moved from Springfield to Belleville. Union officials say that there is an unfriendly attitude toward organized labor in Springfield. Belleville is a mining center and it is felt that the attitude would be more friendly here. Recently it was reported that the headquarters might be moved to East St. Louis because the organization, by foreclosure of a mortgage, had come into possession of a valuable building there. Walter O. Nesbit, secretary-treasurer of the state organization, is from Belleville, and favors the removal to this place.

Hillsboro—The Clover Leaf Coal Mining Co. has filed, in the Circuit Court here, a petition for the confirmation of W. H. Cunningham of Philadelphia as trustee of the property. Cunningham was chosen by the stockholders in March. He is to succeed the Montgomery County Loan and Trust Co., which resigned the trusteeship in November, 1916. The trustee is to hold a deed of trust executed by the company on its property at Coffeen for the security of bondholders.

Alton—Heads of sixteen large Alton industrial plants, facing the prospect of having to close down for lack of coal, on account of the miners' strike in central Illinois, held a meeting at the Board of Trade and sent appeals by telegraph to President Wilson and Governor Lowden. The plants threatened include the city water-works, the ice plant, the Illinois Glass Co., two flour mills and several munitions factories. The Standard Oil plant at Wood-river is in the same plight. Charles Huskinson of the Mississippi Valley Coal Co., which has been supplying the plants

with fuel, told the company and city officials that nothing could be done to avert a fuel famine in a few days unless the miners returned to work.

KANSAS

Pittsburg—Coöperative mining is spreading rapidly in this section. Several new coöperative mines are to be opened soon. Because of the closeness of the beds to the surface, little capital is needed to open a mine. Miners pool their savings and lease some coal land and open a mine and while company mines are tied up by strikes, the coöperatives work steadily and the coöperators buy homes and motor cars. While most of the coöperative miners are union men, the coöperative mines are not unionized. The miners elect their own foremen and managers and work such hours as they please. Each man is paid the union scale and the surplus profits are distributed at intervals. One mine here paid a dividend of \$130 a share last year.

OREGON

Salem—The State Board of Control is debating the question of adopting lignite coal for fuel purposes at the state insane asylum instead of bituminous coal now that it has been definitely decided to change from oil burners to coal burners. In changing over the plant about \$10,000 will be expended.

Issaquah—The Pacific Coast Coal Co. has purchased the Issaquah & Superior Coal Co. mine here for \$300,000 cash through a sale effected by the State bank examiner in liquidating the finances of the Northern Bank and Trust Co., defunct.

WASHINGTON

Seattle—The state board of examiners for mine positions, created by the new mining code and headed by State Mine Inspector James Bagley, are touring through the state holding examinations for the positions of foreman, assistant foreman and fireboss. The law provides that before new positions can be filled, the men must pass the state examination. The examining board consists, besides the State Mine Inspector, of B. H. Johnston, president of the Mendota Coal and Coke Co., D. R. Swem, chief engineer for the Northwestern Improvement Co. and Peter Boos.

Foreign News

Nelson, B. C.—The acquisition of 1500 acres of coal land in the district between Ladysmith and Nanaimo on Vancouver Island, at an outlay of approximately \$750,000, the development of which will require the employment of several hundred men, calling for an additional outlay of probably another \$500,000 and the erection of a modern coke manufacturing plant at its Anyox properties at a cost of \$1,500,000 is a new program of development which the Granby Consolidated Mining, Smelting and Power Co., the largest concern of the kind in British Columbia, has undertaken. F. M. Sylvester is managing director. It is not the intention of the company, at least for some time, to come to utilize its newly acquired coal properties for purposes other than the manufacture of coke for its own use. The company's smelter is now consuming about 250 tons of coke a day.

Personals

J. A. Saxe, of Scranton, Penn., has been appointed assistant superintendent at the Pine Hill colliery of the Pine Hill Coal Co.

Charles E. Britt, manager at Norfolk for the West Virginia Coal Co., has resigned to associate himself with the Clinchfield Fuel Co. at New York.

M. L. O'Neale recently resigned as superintendent of coal mines for the Bird Coal and Iron Co., of Coal City, Ala., his resignation to take effect Sept. 1.

Charles Elkington, Philadelphia, has been appointed vice president and general manager of the Black Elk Coal Mining Co., recently organized with a capital of \$100,000.

E. H. Conrades and **Chris Muckerman** have been appointed to represent the coal interests of St. Louis in a membership campaign that has been started by the Navy League.

J. B. Zerbe, for many years president of the Ohio & Pennsylvania Coal Co., Cleveland, has been elected secretary of the Pittsburgh Vein Operators Association, with office at Cleveland.

J. W. Stacy formerly with the Consolidation Coal Co. in its Fairmont, (W. Va.) field will be transferred to the Van Lear plant at Van Lear, Ky. in the eastern Kentucky coal fields.

C. P. White, secretary of the Pittsburgh Vein Operators Association, has resigned to become general manager of the Clarkson Coal Mining Co., with office at 742 Rockefeller Building, Cleveland.

Capt. Edwin M. Chance has closed his laboratory and abandoned his private practice for the period of the war. After peace is declared, Captain Chance hopes to again resume his private practice.

Charles Jobe, formerly in the auditing department of the Pittsburgh Gas Coal Co. has been made shipping clerk of the Coal Run Mining Co. and Tide Coal Mining Co. with offices at Indiana, Penn.

W. P. Evans, assistant secretary of the West Virginia Coal Operators' Association, has resigned his position to become head bookkeeper and chief office man for the Mallory Coal Co., at Man, W. Va.

J. T. Morris, who has been manager of the Patterson-Pocahontas Coal Co., has resigned and gone to Statesbury, W. Va., where he has accepted the position of manager of the E. E. White Coal Co.

R. L. McCarroll, of Washington, Penn., has resigned his position as secretary and treasurer of the United Coal Corporation and subsidiary companies, and has been succeeded by Thomas Watson, of Pittsburgh, Penn.

W. K. Kavanaugh, president of the Southern Coal, Coke and Mining Co., has returned from St. Paul, where he went to witness the arrival of the steamer "Nokomis" with a tow of six barges of coal shipped by the Southern company.

Thomas Mark recently resigned his position as mine foreman of the Jerome No. 1 mine of the United Coal Corporation to accept the position of superintendent at the Elk Lick mine for the receiver of the Merchants Coal Co.

J. Howard Dugan, for many years a stripping contractor in the Hazleton region has disposed of his machinery and stripping equipment to Dick & Co., of Hazleton. Mr. Dugan has removed to Pottstown where he is an official of the National Rubber Co.

Charles Severn, formerly superintendent of the Russell Coal Mining Co. at Clymer, Indiana Co., Penn., is now general superintendent for the mines of the Emmons Brothers of Philadelphia. Mr. Severn will have his headquarters at Indiana, Penn.

James Berlingett, general manager of the Virginian Ry., with offices at Norfolk, has resigned, effective Aug. 31. He has been connected with the Virginian for 7 years as assistant general manager and general manager. His successor has not yet been announced.

B. H. Cannon has resigned as real estate and claim agent for the United Coal Corporation and subsidiary companies, in order to look after his personal interests. No successor will be appointed, but the duties of the office will be divided among other officials of the company.

W. Guy Srodes, of Pittsburgh, has resigned as chief engineer of the United Coal Corporation and subsidiary companies, to accept the position of general superintendent of the George M. Jones interests, with headquarters at Wheeling, W. Va. His successor has not yet been named.

Robert F. Perkins of Williamsburg, Ky. formerly with the Bon-Jellico Coal Co., Bon Jellico, Ky. has accepted a position as bookkeeper for the plant of the Whitley-Elkhorn Coal Co. at Sergeant, Ky. Mr. Perkins is identified with several of the big coal mining interests of eastern Kentucky.

H. B. Stamper, superintendent of the Waterman mines of the Brush Creek Coal Mining Co., at Homer City, Penn., has been promoted to superintendent of the Jacksonville Nos. 1 and 2 mines of the Jefferson & Clearfield Coal and Iron Co. at McIntyre, Penn., to succeed Martin Maloney, resigned.

J. C. Trevonow, of Salisbury, Penn., recently resigned his position as superintendent for the receiver of the Merchants Coal Co. (Elk Lick mine) to accept the position as superintendent of the Rich Hill mine of the United Coal Corporation at Meadow Lands, Penn. He will succeed William Minford, resigned.

Samuel E. Hawkshaw, mine foreman for the Davis Coal and Coke Co. has been appointed mine inspector of the first district of West Virginia by Chief of Department of Mines Earl A. Henry, to succeed George R. Cook, who resigned recently. The first district is composed of Tucker, Grant, Mineral, Randolph and Barbour counties with headquarters at Thomas, W. Va.

Harry Van Mater, president of the National Fuel Co. and the Royal Fuel Co., headquarters Denver, Colo., operating mines in Boulder, Weld, Huerfano and Las Animas counties, Colorado, accompanied by

his Chief Engineer, Samuel Tescher, went through the Ohio coal fields recently investigating principally the Hocking Valley district. Mr. Van Mater was attracted by the natural resources in the Ohio coal belt and is considering a large investment in that territory. It is said that he expects attractive long time contracts with large users of coal.

Obituary

L. W. Farmer, one of the leading coal operators of southeastern Kentucky, died recently at his home in Barbourville, Ky., following an illness of several months.

Harry Clifton Adams, vice president of the Westmoreland Coal Co., died on Aug. 17 last. Mr. Adams was a graduate of the University of Pennsylvania, Class of 1880, becoming connected with the Westmoreland Coal Co. in 1881. He was elected secretary in 1886 and in 1892 was made vice president in charge of sales. Mr. Adams was a recognized authority on gas coal and wrote various papers on the gas coals of the United States.

Industrial News

Wilmington, N. C.—The Cement Products Co. has established a branch office at Charleston, W. Va. This office will be in charge of N. O. Perkins.

Wilkes-Barre, Penn.—The Hazard Manufacturing Co. recently announced the appointment of George B. North as general sales manager, with office at 533 Canal St., New York City.

Ashland, Ky.—Michael O'Mallie and L. W. Dragon, arrested on charge of conspiring to damage the plant of the Kentucky Solvay Co. here, have been taken to St. Louis to answer charges of impersonating Federal officers.

Hazleton, Penn.—G. B. Markle & Co., operator of the Jeddo colliery has placed three young women in clerical positions formerly held by men. Two are employed in the machine shops as time keepers, and one is on the report desk in the main office.

Seranton, Penn.—Operations have been commenced by the Wagner Fire Brick Co., which is utilizing a new process, that of manufacturing firebrick from coal ashes. The brick made by this process have been given exhaustive tests and have successfully withstood intense heats.

Louisville, Ky.—Specifications on the fuel supplies required by Camp Zachary Taylor, the Federal army cantonment, to provide for 60,000 soldiers, nearing completion here, have been posted in the Board of Trade offices. They call for bids on 7800 tons of anthracite coal; 9200 tons of bituminous coal and 500 cords of wood.

Newport News, Va.—It is stated that the Rockefeller interests will build a railroad from the northern West Virginia coal fields direct to Newport News as soon as possible. This is an emergency line and is to be built to facilitate coal exports. It is said that many people in the Valley of Virginia have already sold property to be used as right of way.

Pottsville, Penn.—The Philadelphia & Reading Coal and Iron Co. has given its machinists, molders, car builders, blacksmiths, boilermakers and other employees, numbering 500 at the company's two repair shops here, an increase of 20 per cent. in their wages. The men had petitioned for a 10 per cent. increase and an 8-hour day. The company's offer was accepted.

St. Louis, Mo.—The field ambulance donated by the St. Louis Coal Club to the First Regiment, Missouri National Guard, is now ready to be sent to France or wherever it is needed. It was turned over to the officers of the regiment recently by President Ridgway and Secretary Wallace of the Coal Club, after it had been exhibited in the streets and photographed for the newspapers.

Columbus, Ohio—Investigations by the Ohio Public Utilities Commission into reports of sales, by Ohio railroads, of coal cars to Canadian roads reveal that such sales have consisted only of old wooden cars, not suitable for use in heavy trains of steel cars such as are now the rule in this section. So far the Commission's investigations show that the transactions were entirely legitimate.

Bruceville, Ind.—The Roberts & Schaefer Co. of Chicago, has just concluded a contract with the Martin-Howe Coal Co. of Chicago, for designing and building complete top works for the 4000-ton mine which it is developing near Bruceville, Ind. This plant will include a four-track double Mar-

cus steel tippie, electric hoisting plant, electrically driven fan, and other usual units for such an installation.

Cincinnati, Ohio—Louis Sternberger, president of the E. L. Sternberger Coal Co., has taken legal proceedings to have his name changed to Stephenson, his mother's family name, on account of the prejudice against German names. The entire family has taken similar action. The petition for the change recited that the family desired to do its part in the war, but was hampered by the German origin of its name.

Minersville, Penn.—The work of raising the steel superstructure of the new Buck Run breaker is progressing with great rapidity, due to the long shifts the workmen are willing to put in on the job. The men are working a 12-hour day and every day, rain or shine. A large locomotive crane unloads the steel from the cars. This is equipped with a long boom which is used to swing the steel into position. Should nothing unforeseen occur this breaker should be ready for machinery installation by November.

Columbus, Ohio—According to a ruling handed down by the Attorney General, the Ohio Legislature has authority to fix food and coal prices, if necessary, without reference to interstate commerce regulations, his view being that when coal has come into the state and been unloaded for retail sale, the "original package" of the interstate shipment is broken and the commodity thus becomes subject to state legislation and regulation. An early special session of the Legislature to regulate food and coal prices is contemplated by the Governor, unless other remedies become feasible. The Attorney General's opinion was therefore asked as to the legality of the proposed action.

Tacoma, Wash.—With the Pierce County board of equalization meeting for its annual session it became known that approximately \$80,000 will be added to the tax receipts of the county next year, by the raising of the valuation of the coal lands from \$600,000 to nearly \$2,000,000. Two years ago the county commissioners proposed to raise the valuation of coal mines 1000 per cent., but a case pending in the superior court, which has since been decided in the favor of the county, held the matter up until the present. Since then the improvements in the coal mines in the county and the development of new workings have made it necessary that a new valuation be set.

Toledo, Ohio—Reports from the docks of the Hocking Valley and Toledo & Ohio Central railroads show that the coal loaded during the past week was considerable. Everything is being done to get a large tonnage to the Northwest before the close of navigation. The Toledo & Ohio Central docks loaded 102,000 tons during the week ending Aug. 17, as compared with 88,000 tons the previous week. The total handled by the Toledo & Ohio Central docks since the opening of navigation is 1,048,000 tons. The Hocking Valley docks loaded 148,000 tons during the same week as compared with 130,000 tons the previous week. The total handled by the Hocking Valley since the opening of navigation is 2,281,000 tons.

Columbus, Ohio—In order to get definite information on the cost of doing business among retailers, secretary B. F. Nigh of the Michigan-Ohio-Indiana Coal Association has sent out blanks to all members to gather such data as might be used in arriving at cost figures. Letters accompany the blanks in which all data is requested. The various items included in the cost accounts are: Executives' salaries, clerk hire, labor outside of office, taxes, insurance, upkeep of wagons and teams, upkeep of motor trucks, bad accounts, fuel and light; miscellaneous expenses such as postage, telephones and stationary, rent, interest on investment, shrinkage, wastage and shortage, depreciation, and the like. When the total expense is secured this is divided by the number of tons handled and the cost per ton can easily be obtained.

St. Louis, Mo.—St. Louis city institutions will get coal next winter at \$1.90 a ton, as a result of an arrangement that has been made by Comptroller Nolte for taking the entire output of a mine in the Belleville district. The contract will be signed shortly. The city will have an option for the purchase of the mine outright at an agreed price within a year. When the city asked for bids recently, the lowest were \$2.75 a ton. Later the Comptroller appealed to W. K. Kavanaugh, president of the Southern Coal, Coke and Mining Co., and he agreed to furnish 20,000 tons at \$2 a ton. Other operators said that they could not lower their bids because of the uncertainty of the situation. The \$1.90 price is at the pit mouth. The city will pay the freight, which is 72¢ c. a ton. The name of the mine will not be made known until the contract is signed.

Market Department

GENERAL REVIEW

Better feeling in the anthracite trade. Bituminous market adjusting itself to the new Government regulations. Canadian centers flooded with coal. An acute situation developing in the Middle West.

Anthracite—Hard coal shipments are slightly heavier and there is a distinctly better feeling in trade circles than for some time, except on certain sizes which are still short. Accumulations in dealers' yards are becoming more frequent, and there are undoubtedly large extra reserves in the consumers bins. It is likely that the big companies will very soon start diverting large tonnages to the chief distributing centers and dealers are already becoming concerned over the matter of handling this coal due to scarcity of labor which will soon be still further accentuated when the draft army is called to the colors. The announcement that 14,000 cars would be diverted from the Pennsylvania R.R. to Western points is viewed with some concern and labor difficulties, including numerous incipient strikes and shortage of miners, are also matters of concern, but the technical position of the market indicates a much better situation than is generally felt to be the case.

Bituminous—The market is practically at a standstill, as a result of the new Government price limit. While it is too early to determine the full effects of the drastic actions taken by the authorities this week there is no doubt but these will be viewed with deep concern. It is also developing that the Government is keeping close watch on the smokeless coals and it would not be surprising to see very important tonnages of these commandeered shortly. In addition to these these coals are especially desirable for use on steamers plying in the submarine zones and it is more than likely that considerable additional tonnages will be diverted for this purpose. Already a great deal of coal is being held at Philadelphia and New York for Government disposition and it is rumored that all the important Georges Creek interests have been notified to hold practically their entire output subject to Government calls. Plans of the authorities to take over a number of the coastwise colliers, is causing much anxiety at Down East points.

Lake Trade—The trade is attempting to adjust itself to the new price level announced at Washington, which has been in effect too short an interval to determine the sentiment regarding it. It is clear, however, that consumers are awakening to a realization of the danger in delaying buying any further and are in the market aggressively; the period of the heaviest car shortage of the year is now approaching, and the situation will be greatly accentuated this season, due to the extraordinary demand occasioned by preparations for war. Labor troubles and strikes in the Southern fields also promise to be an important factor in the situation soon. Buying for the future in the steam trade is becoming more common, particularly with the larger consumers who prefer to take no chances. The heavy shipments of coal to Canada to take advantage of the higher prices ruling there have resulted in a severe congestion and prices are now much easier in that direction.

Middle West—Many mines are idle on account of strikes, and all indications are that a critical situation is at hand. Very little coal is to be had in the spot market, and the labor situation is suddenly becoming more acute; it is doubtful if the extraordinary demand for fuel could be well taken care of with the mines running smoothly and adequate transportation facilities, so that any interruption from labor difficulties is a serious factor at this time. The withdrawal of Eastern coal from this market, due to rail embargoes, tends to accentuate conditions still further. The movement up the Lakes shows some improvement, which is an encouraging feature, since it will tend to relieve the pressure for Middle Western coal in that section.

A Year Ago—Anthracite wholesale trade active. Strong demand for bituminous. Exports heavy. Lake movement handicapped by scarcity of vessels. Middle Western steam consumers accumulating reserve stock.

Comparative Average Coal Prices

The following table gives the range of mine prices in car lots per gross ton (except where otherwise noted) on 12 representative bituminous coals over the past several weeks and the average price of the whole group for each week for the past four months:

	Year Ago	Aug. 25	Aug. 18	Gross Averages*
Boston				1917 1916
Clearfields.....	\$1.15@1.75	\$3.64@4.50	\$3.64@4.50	Apr. 28 3.81@4.12 1.45@1.62
Cambria and Somerset.....	†1.45@2.00	3.64@4.50	3.64@4.75	May 5 4.04@4.40 1.45@1.59
Pocah. and New River ¹	†3.15@3.50	5.14@7.00	5.14@6.50	May 12 4.64@4.98 1.44@1.59
Philadelphia				May 19 5.08@5.54 1.42@1.56
Georges Creek (Big Vein)....	†1.95@2.05	3.25@3.75	3.25@3.75	May 26 5.10@5.58 1.41@1.55
W. Va. Freeport.....	†1.35@1.40	3.25@3.75	3.25@3.75	June 2 5.00@5.46 1.47@1.63
Fairmont Gas mine-run.....	†1.45@1.65	3.25@3.75	3.25@3.75	June 9 4.80@5.24 1.52@1.72
Pittsburgh (steam coal)²				June 16 4.77@5.23 1.50@1.66
Mine-run.....	1.35@1.45	3.00@3.25	3.00@3.25	June 23 4.81@5.15 1.51@1.67
3-in.....	1.45@1.55	3.50@3.75	3.50@3.75	June 30 4.79@5.15 1.46@1.64
Slack.....	.95@1.00	3.00@3.25	3.00@3.25	July 7 3.88@4.35 1.41@1.57
Chicago (Williamson and Franklin Co.)³				July 14 3.95@4.12 1.41@1.57
Lump.....	1.65@1.75	3.45@3.55	3.45@3.55	July 21 3.96@4.13 1.41@1.57
Mine-run.....	1.20@1.30	2.70@2.80	2.70@2.80	July 28 3.39@3.88 1.43@1.58
Screenings.....	.95@1.05	2.70@2.80	2.70@2.80	Aug. 4 3.48@3.84 1.45@1.60
				Aug. 11 3.48@3.97 1.48@1.66
				Aug. 18 3.38@3.87 1.48@1.66
				Aug. 25 3.38@3.89 1.50@1.70
Gross average ⁴	\$1.50@1.70	\$3.38@3.89	\$3.38@3.87	

¹ F. o. b. Norfolk and Newport News.

² Per net ton.

³ The highest average price made last year was \$4.80@5.33 made on Nov. 25. ⁴ Price lower than the week before. †Price higher than previous week.

COAL PRODUCTION

Continuing its downward course the ratio of tonnage produced to full-time output declined sharply in the week ended Aug. 4. Nearly 900 mines, representing more than one-third of the output of the country, produced in the aggregate 72.8 per cent. of their combined full-time capacity as limited by the present labor force. The figure is not only less than that of the previous week (75.1), but falls almost as low as that of the slack week of June 30. The decline in production was sharpest in Indiana, Illinois and the southern Appalachians; in Ohio and western Pennsylvania an exceptionally favorable car supply caused an increased output.

PERCENTAGE OF PRESENT FULL-TIME OUTPUT PRODUCED IN CERTAIN STATES BY ALL OPERATORS MAKING WEEKLY REPORTS

State	Per Cent. of Full-Time Output Produced in Week Ended:	July 7	July 14	July 21	July 28	Aug. 4
Iowa.....	79.2	89.9	86.4	87.3	87.5	
Illinois.....	79.6	79.5	77.1	76.0	72.6	
Indiana.....	73.0	73.0	69.3	67.8	60.5	
Ohio.....	75.3	69.3	69.2	69.4	73.7	
Western Penn.....	75.4	78.6	77.9	76.3	78.1	
Southwestern Va.....	76.9	85.6	89.6	88.2	91.9	
East. Kentucky and Tennessee.....	75.0	78.4	81.0	82.6	68.6	
Alabama.....				91.4	88.4	
Kan. and Missouri.....	85.6	78.0	78.2	69.5	69.4	
Okl. and Ark.....	61.6	75.7	69.2	79.0	63.4	
Total.....	77.2	77.9	76.0	75.1	72.8	

Reports of cars of coal loaded on roads representing more than half of the shipments in the United States given in the following table show a gain of nearly 3.5 per cent. in the week ended Aug. 11, compared with the week ended Aug. 4 in all districts except Pennsylvania and Ohio. The largest gains were in the southern Appalachians and Alabama and in Illinois and Indiana. The average daily loading on these roads in the second half of July was 2.5 per cent. less and in the first half of August was 9 per cent. less than in the first half of July.

CARLOADS OF COAL ORIGINATING ON PRINCIPAL COAL-CARRYING ROADS

District	July 21	Week Ended July 28	Aug. 4	Aug. 11
Ala., E. Ky., and E. Tenn.....	8,794	9,415	7,579	8,565
Ill., Ind. and West. Ky.....	17,923	16,766	14,452	15,864
Pa., and Ohio.....	44,372	44,180	41,397	41,201
W. Va. and Va. Smokeless.....	10,709	10,733	10,212	10,261
High volatile.....	16,652	17,860	16,648	17,426
West of the Mississippi.....	1,704	1,813	1,794	1,858
Total.....	100,154	100,767	92,082	95,175

BUSINESS OPINIONS

The Iron Age—The President's announcement of a \$2 base on bituminous coal instead of the concession of a \$3 price made by the operators is no surprise, and it does not furnish the key to the vastly more complicated problem of steel prices. Coke prices, it is to be expected, will be fixed in line with coal, but as the fixing of a low price for coke will not increase the supply and may lessen it, the effect on the pig-iron market is yet to be determined.

Cheaper coal, however, will mean lower cost in melting and heating operations at steel works and hence some revision of cost sheets now in the hands of the Government.

Dun—Not only trade and industry, but also speculation, have come more closely under the domination of war conditions, and there is still hesitancy and waiting in many directions. Another week has failed to disclose what decision will be reached in the all-important question of fixing commodity prices, and until there is clearer knowledge of the readjustments to be effected, the halting tendencies in the larger industries, and in securities, may be expected to continue. Commercial failures this week are 257, against 273 last week, 247 the preceding week and 352 the corresponding week last year.

Bradstreet—New business, which is increasing at wholesale, is streaked with conservatism, but optimism as to fall trade has not abated, the crop situation is better, governmental buying is expanding, and industry, taken as a whole, continues very active. Most reports regarding wholesale trade, while admitting lack of snap, agree that business is good, being relatively better in the crop growing sections than elsewhere, and it is generally felt that fall trade will be of large proportions. Yet caution in granting credits is generated by the fact that prices are inordinately high, and, incidentally, the processes now making for the readjustment of quotations is an unsettling factor, just as is the question of how far civilian wants will be replaced by takings of army goods.

Marshall Field & Co.—Wholesale distribution of dry goods for the current week is well in advance of the corresponding period of a year ago. Merchants have been in to market in about equal numbers, many of them being attracted here by Chicago's Style Show. Road sales for both immediate and future shipments show good increases over the same period in 1916. Collections are ahead. Prices are firm.

Dry Goods Economist—The discount controversy between manufacturers of ready-to-wear garments and the buyers of these lines has apparently been settled by the establishment of a double scale of prices, the higher being subject to a discount of 8 per cent. 10 days, while the lower prices are based on a discount of 2 per cent. 10 days. Now that the terms have been adjusted, buyers are ordering freely.

CONTRACT PRICES

Columbus, Ohio—The Columbus board of education has announced that the fuel contract, amounting to approximately 12,000 tons for the coming winter, will not be awarded until price fixing, either by the Federal or state authorities, is finally accomplished.

Columbus, Ohio—The purchasing department of the Ohio State University has invited bids on its fuel supply for the coming winter, amounting to more than 15,000 tons. The invitations contain the same specification as in former years and it is doubtful if many bids will be received.

Louisville, Ky.—Specifications for coal for Camp Taylor for the period from Sept. 1 to Nov. 30, call for 9200 tons of bituminous coal and 7900 tons of anthracite.

St. Louis, Mo.—City Comptroller Nolte has succeeded in hammering down the price of Standard coal for the city institutions from \$2.75 to \$1.90 per ton. In getting this price, however, the city agreed to take the output of a mine near Belleville, Ill., with an option to purchase the mine within a year. The identity of the mine and who offered it has not been made public, but the city intends to get from 300 to 500 tons a day from this source.

On 20,000 tons of washed coal for the City Hall and Sanitarium the bid price was \$2.75, but the Southern Coal, Coke and Mining Co. had agreed to reduce their figure to \$2 a ton at the mine when their civic pride was appealed to.

Atlantic Seaboard

BOSTON

Movement of Hampton Roads coals confined mainly to contract and Government needs. Spot sales still light. Pennsylvania grades in good request but sales are restricted. Anthracite barge deliveries show a slight improvement in tonnage, due to cargoes of steam sizes.

Bituminous—Pocahontas and New River are being held very closely at first hands; the great bulk of the tonnage is being shipped on contracts and on naval and other Government requisitions. Inquiries for spot coal are little heeded, so evenly is the flow of coal to Tidewater adjusted to actual obligations of the various agencies. The fact is the surplus output, such as it is, still finds its most advantageous market in the West, both in slack and prepared sizes. The movement west of run-of-mine has also materially increased. The Government, too, is keeping in close touch with miners of the smokeless coals and it would not be surprising any day to see an extra large volume of coal commandeered for war purposes.

It is increasingly evident that the smokeless coals are going to be taken in liberal quantities. Experience in the submarine zone has established the great value of the less smoky fuels and already the strongest pressure is being brought to bear even upon merchant vessels to use none but the low volatile coals while trading in dangerous waters. Consumers here who have large contracts with the Hampton Roads shippers are quite apprehensive about future deliveries while the Government shows signs of taking more and more coal as war preparations advance.

The shippers, therefore, are in no position to offer coal on the open market. Only a few of the smaller factors are making sales, and these only occasionally for bunker purposes or a cargo here and there for New England. The wide range of \$5.14@7 can still be quoted, although such prices are not nearly so significant as a month or two ago. Dispatch, too, has been irregular. There is not enough cooperation in the pooling arrangement to make it really effective, and there have been several periods when large colliers have been kept waiting.

For all their close watching of the market New England consumers derive very little comfort from the Hampton Roads situation. Except in rare instances spot cargoes are not to be had. A few buyers who have several plants to look out for are spreading their smokeless coals about and making up the deficiency with coal from other sources.

The possibility that certain of the 8500-ton steamers regularly bringing Pocahontas and New River to this market will be taken for over-sea transport has been a real cause of alarm the past week. One ship, for instance, helps supply a very large inland trade that includes the big textile mills of Lowell and Lawrence, and another is practically the sole carrier for a large public utility. The latter is specially equipped to take its supply in this way and everything that threatens a continuous supply is most

serious. Each of these steamers brings to this port an average of 350,000 tons per year. The Federal Shipping Board has the subject under advisement and with the present situation of New England railroads it is certainly to be hoped that our channels of coal supply will not be further interfered with.

The recent sale of the collier "Plymouth" to an allied government has its interest in this connection. The price is reported to have been \$2,700,000.

From distributing points inland there is only occasional inquiry. Most of the spot trade for smokeless coals in this direction has been diverted to coals that are open to all-rail shipment.

The situation on the Pennsylvania steam coals seems to be curiously mixed. On one hand there are a few factors who are adhering to the \$3.64 gross ton maximum, but on the other hand there are several shippers who are offering spot shipments freely at 75c.@\$1.25 premium. Between the two are a fair number of operators who are confining themselves strictly to engagements entered into prior to July 1. The result is a decided medley of prices and a market rather restricted as to sales.

Buyers who canvass the selling agents are quite likely to be quoted \$5 one minute and \$4.35 the next on coals equally good. The lower-priced quotations are usually made by houses close to first hands where not over two commissions are paid.

Large tonnages are being held at the Philadelphia and New York piers for Government disposition. There is also quite a tonnage on wheels that is being held for bunker and other purposes promising more lucrative return than the \$3.64 mine basis.

There is much eagerness to hear the Administration's policy with regard to coal distribution, but in any event there is a pronounced feeling here that New England will be about the last section to be taken care of. It is in consequence of this pessimism among local buyers that purchases are still being freely made at current prices for what coal can be shipped promptly.

It is rumored that practically all the Georges Creek interests have been notified to hold practically their entire output at the Government's disposal.

Bituminous at wholesale, f.o.b. loading ports at points designated, is quoted about as follows:

	Clearfields	Camb. and Somersets
Philadelphia.....	\$4.94@5.85	\$4.94@6.10
New York.....	5.24@6.15	5.24@6.35
F. o. b. mines.....	3.64@4.50	3.64@4.75
Alongside Boston (water coal).....	8.00@8.35	8.25@8.50

Pocahontas and New River are quoted from \$5.14@7 f.o.b. Norfolk or Newport News, Va., for spot coal, and \$9@9.25 on cars Boston or Providence for inland delivery.

Anthracite—The clear weather of the past fortnight has helped considerably the movement of barges and receipts at this end are that much improved. The general situation, however, has just as dubious a prospect as ever. If August shows no material gain September is not likely to, and shipments by Lake will soon be having preference.

The "solid train-load" plan seems to have fallen by the wayside. The extent to which Tidewater shipments were thereby endangered has now been realized by the originating companies, and the railroads concerned are now bending their efforts to get back from far eastern points the cars they sent forward on the representations of certain "coal committees." A sea-going coal barge carrying 1500 tons and returning to port in two weeks' time is a far more efficacious way of serving Tidewater New England than to send coal cars that may not return this year. Strange as it may seem to some of the well-intentioned but rather dense tribes of the people these barges were built for this trade and anything that tends to interfere with their loading is not a favor to New England.

"Independent" coal has been offered this week at \$8.75 alongside Boston for egg, stove and chestnut, and \$7.75 for pea; \$6.15 for egg and stove is the ruling price f.o.b. mines, and as high as \$7.50 is being asked for broken f.o.b. New York.

NEW YORK

Anthracite dealers rushed with orders with no coal to fill them. Uncertainty causes trouble in bituminous market. Some operators reported as breaking away from Government prices. Developments in Washington being watched. Bituminous supplies in New England reported as surprisingly large.

Anthracite—The last week of the month finds the demand heavy with little coal at Tidewater to meet it and dealers being urged to fill orders some of which were taken in April. Egg and stove are in short

supply while the stock of chestnut on hand is not large. Retailers are unable to store coal because of the many unfilled orders and most of them are facing the fall and winter with practically no coal in their bins. Some retailers say that the demand at this time is 100 per cent. greater than it was several weeks ago, owing to the anxiety of householders to fill their bins and the desire of apartment-house owners to replenish their stocks.

Wholesale dealers are swamped with orders which will carry them until the middle of next month. While the operators are endeavoring to keep production at a maximum various mines are idle because of outtings, church days and button strikes due to the failure of mine-workers to pay their union dues. These strikes are of frequent occurrence, notably so since July 26, which was known as "Button Day" and continue for two or three days and sometimes longer. That they mean considerable in the way of reducing production is shown in the statement of the head of one company that up to the 15th of this month his company had produced at least 15,000 tons of coal less than it would have done if there had not been any strikes.

There is little of the domestic coals at Tidewater. Company coals are moving freely and independent supplies are going chiefly to other markets. Chestnut coal is the longest here. Wholesale dealers as a rule are adhering closely to the Federal Trade Commission prices.

Pea coal is scarce with quotations for free stock reasonably stiff. Buckwheat No. 1 is not plentiful, but rice and barley are easy and some dealers insist that buyers of domestic coals take a reasonable supply of these two sizes in order to relieve the situation.

Current quotations, per gross ton, f.o.b. Tidewater, at the lower ports, are as follows:

	Circular	Individual
Broken.....	\$5.60@5.75	.....
Egg.....	5.60@5.75	.....
Stove.....	5.85@6.00	.....
Chestnut.....	5.90@6.05	.....
Pea.....	4.40@4.95	\$6.00@6.20
Buck.....	4.00@4.15	4.50@5.10
Rice.....	3.40@3.60	3.00@3.25
Barley.....	2.90@3.10	2.30@2.60

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—Uncertainty as to developments in Washington resulted in a quiet market at the New York Tidewater. The trade was very much unsettled and careful as to what they would do with regard to the taking of orders for future delivery. Coal on the basis of \$3 net ton at the mines was not to be had and it was said that many of the largest operators were ignoring the price fixed at the Washington conference and were booking orders for "export" or "bunkering" coal at from \$4 to \$5.

Spot coals are scarce and large consumers without mine connections or contracts are finding it difficult to secure supplies. They are instructing middlemen in some instances to get the coal at any price. Dealers with loaded boats find a ready market and good offers.

The demand continues heavy with production good but car supply poor. There is an urgent call from Canada and as prices are better than elsewhere shipments there are heavy. There is also a persistent demand from New England, where returning coalmen say the supplies stored are surprisingly large.

The pooling system is gradually getting into working order and by the first of September will, it is expected, be working smoothly on all the docks here. So far there has been effected a big reduction in the average demurrage time and coal is moving more freely notwithstanding accidents to the dumping apparatus on some of the piers. It is reported that many of the large shippers who did not become members of the Exchange are joining now.

Considerable coal is being confiscated and one road has notified operators along its line that all loadings on Friday and Saturday will be for its own use. The railroads, as a rule, have large stocks of coal on hand, but continue to buy heavily.

Stocks here are low and many plants are on the verge of having clean bins. Some operators along the Pennsylvania are reported as quoting \$5 for bunker coal, while operators along the B. & O. are quoting \$1 less. Coal for bunker purposes is quoted from \$6.50 to \$7, f.o.b.

Current quotations, per gross ton, f.o.b. Tidewater, for various grades, are as follows:

	F. O. B.	Mine Price
Commercial coal.....	\$5.50@6.00	\$3.00 net
Bunker coal.....	6.50@7.00	\$4.00@5.00

PHILADELPHIA

Anthracite trade in good condition. No improvement in car situation. Big companies likely to make good shipments soon. Pea and stove most active sizes. Some little storage of pea. Steam sizes unchanged. Bituminous in unsettled state. Fair tonnage received, but car supply indifferent.

Anthracite—The selling agents, especially those of the big companies, have spent another busy week listening to the complaints of dealers because they have so many orders on hand, taken early in spring, and insufficient coal to complete them. It is apparent the representatives of the different shipping companies are tiring of listening to these complaints, because they are beginning to believe that a larger percentage of the retailers' business has been delivered than they will themselves admit. It is very possible that three-quarters of the dealers have delivered 75 per cent. of their orders. Of course, they are selling more coal than ever before and in their anxiety to either increase their business or to store coal they continually harp on the fact that many April orders remain unfilled on their books. They refuse to acknowledge that most of the business that came later and at the higher prices has been completed.

It is found that customers who placed their orders early at the lowest rates have become alarmed at the dealers' delay and placed their orders with other houses at full prices; the latter dealers have then filled these new orders and neglected their own low-priced trade. In some instances, the dealers have been known to purposely discourage the cheap buyers with the idea of having them cancel the orders. This, of course, is because the dealers know they can obtain full prices for all the coal they can purchase. The customers usually threaten to permanently transfer their business elsewhere, but the retailers are not affected in the least by this, as experience in times similar to these has shown that the coal dealer gets about as many new customers as he loses.

There is no doubt that the shippers are becoming more familiar with the situation and are less sympathetic with the dealers. Unquestionably there have been some unfortunate retailers whose business connections were poor who are now being neglected. However, the retail trade here is in better shape than many believe, with the advantage in favor of the dealers located on the Philadelphia & Reading Ry. tracks.

The Pennsylvania R.R. dealers continue to suffer, owing to the car situation and the recent orders of that company to send 14,000 additional cars to the Western market is sure to further embarrass them, especially as the Philadelphia & Reading Ry. Co. still refuses to allow its own cars off its line. The Lehigh Valley is still sending but a limited number of its cars to the Pennsylvania R.R. The accumulation of cars at Park Junction has been reduced and the B. & O. R.R. has removed its embargo.

Port Richmond is embargoed and Port Reading practically so. It is understood that conditions are bad at both of these piers and it is just possible the congestion is due to the inability of the railroads to properly handle the business and not the fault of the shippers, as some of the railroad representatives insinuate.

The railroads continue to require shippers to use box cars and as there is no longer any serious objection to them they are being shipped quite freely. With all the trouble with the car situation, some local dealers claim they can procure all the coal they care to buy from the individuals if they will pay their premiums. For instance, one dealer became desperate and placed a large order with one of the smaller shippers with the result that the coal came so rapidly that the railroad placed an embargo on the yard until all the coal was unloaded. Yards fairly well stocked with coal are becoming a little more frequent of late.

The fact that one large company has sent more coal to this market during the past ten days than for the past six months gives color to the rumor that all big companies will soon open up to this territory. These shipments have in no way been heavy, but the fact that they have shipped at all lends encouragement to the dealers. The dealers will be somewhat troubled though if shipments should come heavy within the next few weeks as to whether they will be able to get sufficient help to make deliveries of their remaining summer business in the short time now till frost. Constriction is affecting them seriously now and labor is quite short.

While it seems probable that the President will any day now issue an order assuming practical control of the coal industry, it is not felt that this will affect the

anthracite trade particularly. With the suggestion of maximum prices by the Federal Trade Commission several months ago, the price situation in the hard-coal industry has about resolved itself into a satisfactory routine. There are a few exceptions where advantage is still being taken, but this is by very small interests and the tonnage concerned is almost nominal. For instance, we know of one concern who offered pea coal to a former customer at price of \$5.50 at the mines, while another asked \$5.10 for the same size. As most of this emanates from small brokerage houses we think the remedy will be easily and effectively applied.

An interesting rumor in the trade this week was that the old Schuylkill canal was to be rehabilitated and used to convey coal for Government use at Tidewater. The canal has only been nominally operated for years, moving a limited number of coal barges each season. It was stated that the authorities were considering the equipment of ships for anthracite burning in order to eliminate the smoke of soft coal, which often betrays the ship to the enemy submarines.

Broken coal continues its strength and easily brings \$6.25. Egg coal is in short supply to the larger dealers here because of the immense tonnage being consigned to New England, and the smaller retailers are also evidencing considerable concern now at their inability to procure as much of this size as they need. The stove-coal demand has outgrown that of any other size until now there is less on hand in the dealers' yards than any other. One retailer, who is by no means the largest in the city, has orders for 2000 tons unfilled. We doubt if he will succeed in having the equivalent of forty battleships of this size shipped him before fall.

As heretofore chestnut remains the weakest of the family sizes locally. The demand from the West continues and offers at fancy prices are coming in. It is difficult to understand the attitude of some of the local dealers as to chestnut. Many admit having filled most of their orders for this size and are lax in their efforts to secure more; others realize the importance of storing all of this size they can care for, and continue to urge shippers for it. After last winter's experience all coal men should realize the value of chestnut, if only as a substitute for pea coal. There is little doubt that by next winter many small buyers who in the past always used pea coal, will be glad to pay the higher price if they can secure the chestnut size.

Dealers continue in their frantic efforts to have pea coal shipped to them. It is a fact that their spring and summer sales of this size are lighter than for egg, stove and chestnut, but the coal is wanted for storage. The largest bins in the dealers' yards are reserved for pea coal and by early fall they are invariably filled to their capacity. Conditions this year vary so much from normal times that not only are the immense storage spaces bare, but the dealer is given absolutely no encouragement when he can expect the coal. There is an occasional yard with a little in storage, but the buyer keeping very quiet about it. One dealer, for instance, who had decided to plunge on this size has been buying any kind of coal from washery to fresh-mined all summer long at the best price he could obtain and now he has from 1500 to 2000 tons of it; the average price of this coal to him so far has been \$4.65 per ton and the retail price fixed by him for August delivery is \$7 per gross ton, c.o.d.

The steam sizes gather no strength. Buckwheat is being sold in carload lots at \$3.50, the price at which some of the largest contracts were closed. Rice remains weak and has been sold as low as \$2. The situation on barley is becoming troublesome to some and sales have been made at \$1. A good tonnage of these small steam sizes continue to be placed in the storage yards of the mining companies and we rather expect to see some suspension of work at the banks from which the larger percentage of rice and barley is obtained. Some operators express the opinion that the movement of Pennsylvania R.R. cars to the West will have its effect on steam sizes. They claim Eastern users of bituminous will be unable to obtain it in sufficient quantity, and will be compelled to turn to anthracite.

The prices per gross ton, f.o.b. cars at mines for line shipment and f.o.b. Port Richmond for Tide, are as follows:

	Line	Tide		Line	Tide
Broken.....	\$5.10	\$6.25	Buck.....	\$2.90	3.30
Egg.....	4.35	5.65	Rice.....	2.40	3.40
Stove.....	4.60	5.90	Boiler.....	2.20	3.30
Nut.....	4.70	5.95	Barley.....	1.90	2.15
Pea.....	3.30	4.20			

Bituminous—The trade continues in a most unsatisfactory condition. The rumors

of further price regulation have now crystallized themselves into a well-defined report that the Government will assume control of the bituminous business and action is likely to be had within a short time. Those best informed in the trade hardly expect this, but really think that a newer basis of distribution and a change in the price schedule so as to assure equity to all shippers, together with a guarantee of better rail conditions will be the outcome of the new order. Even at this many feel that the old agreement with the Federal Trade Commission guaranteeing prices at \$3 and \$3.50 would entirely meet the situation if proper railroad equipment can be assured.

Some of the newspapers insist that lower prices must rule, but how this is to be accomplished at present costs is difficult to comprehend. Some shippers are inclined to believe lower prices will be forced on them and on this account we have heard rumors of some little contracting at the above prices. We heard of one piece of business covering 10,000 tons of coal at \$3.64 per gross ton for the period of three months. In the event of lower prices there is no doubt that the contract business will not be disturbed.

For the week the car supply has shown no improvement and the amount of coal reaching here just about meets current requirements, allowing very little margin for storage by the big users. During the week it was reported some coke sales had been made at \$15, but we think the average is somewhat nearer \$13 or \$14. It is felt also that coke will be a subject of consideration should the Government announce a new arrangement in regard to the fuel supply.

BALTIMORE

On the eve of Government regulation the trade here is in a state of perplexity. Tidewater pool embargoes a feature. Hard coal scarce.

Bituminous—Never in the history of the coal trade has such a state of uncertainty existed as prevails at present due to prospective Government regulation. The week began with a \$3 and \$3.25 Government agreement maximum technically in force, but with little or no fuel being offered at that price. The trade in many instances was insisting on better prices, by direct quotations or by subterfuges such as listing run-of-mine coal at the lump Government price of \$3.50 at the mines. Inability to get \$3 coal was evident when the city of Baltimore failed to receive a single direct bid on 44,000 tons of bituminous. No one would bid at \$3 or \$3.25, and were apparently afraid to bid higher. One mine later offered to sell its entire output for the year, about 100 tons a day, at a price of \$3.50.

As a whole the Tidewater pool is working better, although it has its complications. Officials of the pool report that local consumers for the most part are getting fuels to which they are accustomed, and that some changes in pool numbers have added to uniformity. An embargo placed on all shippers not members of the pool is reported to have driven all but one firm into the pool. Another embargo was placed in part on Track No. 24, against shippers who had allowed a quantity of low-grade fuel to come through.

Anthracite—Very little hard coal comparatively was received here. The shipments over the Pennsylvania suffered another big drop. Over the Western Maryland there was a fair movement as gaged by recent handlings, but this was practically all fuel at a 75c. premium. The lack of receipts of schedule-priced fuel cut down deliveries here. As September approaches with a large part of the business on the books still undelivered the coal men grow uneasy.

HAMPTON ROADS

Congestion continues at Sewalls Point and Newport News. Bunker and export trade brisk. Coastwise business active.

All vessels at Sewalls Point and Newport News are meeting with serious delay, owing to congestion at these terminals. Lambert's Point, however, is giving excellent dispatch to all vessels calling there. There seems to be no change in the volume of business, all piers being taxed to their capacity.

The bunker business is unusually brisk, steamers taking as much bunker coal as possible, to avoid coaling in foreign ports. The Navy Department continue making heavy demands for their requirements, and the export trade is heavy. During the past week several of the largest cargo steamers have loaded full cargoes at Hampton Roads, and shippers are absolutely unable to assemble any coal at these terminals. Practically all of the business is moving on contract, very few spot sales having been made. The price is \$6.50@7 plus trimming on spot bunker sales.

The new tariff of the Tidewater railroads was scheduled to go in effect on Aug. 20. This tariff provides for six days straight time or three days average time.

The local dealers in anthracite are unable to secure this grade in any quantity, and stocks on hand are low. The price is \$9 per ton for cash, and \$9.50 per ton on the basis of 60 days.

Dumpings at the Hampton Roads piers for the past several weeks were as follows:

	July 28	Aug. 4	Aug. 11	Aug. 18
Nor. & West...	144,743	121,170	115,925	178,071
Ches. & Ohio...	104,865	81,188	.....	116,595
Virginian.....	84,236	108,117	96,132
Total.....	333,844	390,798

Ocean Shipping

OCEAN FREIGHTS

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Note—Charters for Italy, France and Spain read: "Lay days to commence on steamer's arrival at or off port of discharge."

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W. W. Battie & Co.'s Coal Trade Freight Report.

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Lake Markets

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There are reports that quite a number of manufacturing consumers of coal have accumulated rather large stocks, running up to a three months' supply in some instances. It is well known that the railroads have been stocking coal at least as heavily as they usually do at this season. It is held that the stocking of coal has produced a greater scarcity than would otherwise exist.

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Anthracite—Local distributors and retailers complain that they are getting much less coal since the big drive of Lake shipments set in, which is doubtless true, yet the shippers feel that they must do this if they are to get as much coal on the Upper-Lake docks as they need. The fall movement may have to be light in order to allow the fleet to go more into ore. There will certainly be no surplus tonnage then in any trade if grain moves as it is expected to.

As the shippers gage the situation they are satisfied that they will get enough coal into consumers' hands this fall to enable them to make up all deficiencies by rail next winter. They must, however, make a careful apportionment and yield to no clamor.

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Expectation of price reductions is check on buying of steam coal. Anthracite sales are light. Larger movement goes over Lake routes.

Bituminous—Just what the outcome of the present policy of holding back buying will be, it is difficult to predict, though local jobbers assert there is great danger that those who delay may find themselves unable to get coal, when they decide to come into the market. In this connection attention is directed to the fact that 30,000 freight cars were employed full time in July, handling traffic created by the establishment of army training cantonments. With other demands for freight cars growing as the crop harvesting season advances, the dilatory coal buyers, according to the jobbers, incur the risk that they will be unable to obtain delivery of coal, when they come to the buying point. In the domestic trade consumers are displaying the indifference that comes with summer weather and distribution is proceeding more slowly than in April. While some of the retail dealers

have fair amounts of stock, others are not in a situation to proceed far with the filling of orders when the fall rush of buyers sets in.

Anthracite—One of the most recent developments in the anthracite trade is the entrance of Gov. A. E. Sleeper. At a conference in Lansing, Mich., a few days ago, Governor Sleeper named a special committee of which Henry McMorran, of Port Huron, is chairman, to look into the reason for the small movement of coal, which the governor's figures show is only about 6 per cent. of the state's normal requirements. The movement of anthracite to Detroit is light and retail dealers show no haste to put in larger stocks.

Lake Trade—Shipments from the mines to Lake loading docks show a substantial gain in volume, though the figures fall short of estimates of the amount necessary to supply the Northwest. Vessel tonnage available for loading coal exceeds the number of cargoes at hand. On coal loaded for the head of the Lakes, shippers are quite generally paying a rate of 50c. a ton.

TOLEDO

The demand for Lake tonnage continues strong. Market conditions in general good. Sudden cool weather stimulates domestic buying.

The time of waiting appears to be over according to wholesalers, and buying of all grades and sizes of coal is much more active than it has been in the past month. All buyers seem to feel the lowest prices have been reached and are making strong efforts to get a supply of coal for the coming winter.

The steam trade has been doing the heaviest buying during the week and all indications point to a continuance of this for some time to come. None of the large factories and institutions have anywhere near a normal supply of coal on hand, and as it approaches time to move crops and other supplies for the successful prosecution of the war the shortage of transportation facilities is becoming more and more evident. A large local concern has just finished constructing an enormous pit for the storage of steam coal and is now looking to find someone who will agree to stock it.

Many dealers about the city are placing orders for the stocking of their yards, and buying in this branch of the business has become very active. Stocks of anthracite and Pocahontas are scarce in this section, and most of the small dealers have been caught without a pound of hard coal in their bins. Dealers are pointing out to the people that instead of a reduction in the price of anthracite, the mine price has advanced, and all things indicate another advance in August and September. They are also advising their customers of a possible congested demand this fall and assuring them that this demand cannot be satisfied by either newspaper clamor or unnatural legislation.

The vessel movement is good and the docks at this point are all busy. Lake shippers are employing every means in their power to insure a large tonnage at the head of the Lakes at the close of navigation. Vessels which heretofore had been leaving this port without a cargo for the North are now coal carriers.

Prices on tons, f.o.b. mines, are as follows:

	Mine run	Lump and Egg	Nut and Slack
Hocking & Pomeroy.....	\$3.25	\$3.75	\$3.25
West Virginia Splint.....	3.25	3.75	3.25
Kentucky.....	3.25	3.75	3.25
Pocahontas.....	3.25	3.75	3.25

COLUMBUS

The coal trade is awaiting final action on price fixing and there is little domestic buying. Steam business is fairly active and Lake shipments are unusually large.

Lake shippers are straining every nerve to supply the Northwest with fuel before the close of navigation. Lake vessels are being run efficiently as little time is wasted in loading and unloading. Reports from the upper Lake region shows that there is no congestion as the coal is being moved from the docks promptly. Lake prices continue strong in every respect.

The steam trade is fairly active. Larger consumers have been trying to accumulate a surplus and some have succeeded in securing some excess stocks. The smaller user generally has been content to buy as needed, although there is now a feeling of uncertainty of future car supply and buying for the future is more common than formerly. Manufacturing is still active, especially in iron and steel circles. Other lines of manufacturing also have large fuel requirements to be met.

Domestic trade is almost at a standstill, due to uncertainty as to price. Retailers have some stocks of high price coal, which they are unable to sell at a profit. They are loath to stock up until price matters are definitely settled. Consumers are waiting to see what will happen and consequently only about 25 per cent. of coal has been stocked, compared with the same time in previous years. There is a fairly good demand for Pocahontas under the circumstances and stocks are rather scarce. Anthracite is in good demand and prices rule high. In fact there is a considerable range in retail prices. Hocking lump is selling from \$5.50 to \$6 and West Virginia splints from \$6 to \$6.50.

Production has been rather good during the past week. Car supply in the Hocking Valley and Pomeroy Bend fields has been about 80 per cent. of normal. In eastern Ohio the output has been curtailed by small car supply until it has been about 65 per cent. of normal.

Prices on short tons f.o.b. mines are as follows:

	Hock- ing	Pom- eroy	Eastern Ohio
Rescreened lump.....	\$3.50	\$3.50	
Inch and a quarter.....	3.50	3.50	\$3.50
Three-quarter inch.....	3.00	3.00	3.00
Nut.....	3.00	3.00	3.00
Egg.....	3.00	3.00	
Mine run.....	3.00	3.00	3.00
Nut, pea and slack.....	3.00	3.00	3.00
Coarse slack.....	3.00	3.00	3.00

CINCINNATI

Strength continues in the market. Impression growing that lower prices will not be made and that coal will be hard to get. Car supply is better.

Steam demand continues at a heavy rate, while shipments to Lake ports are in the same large volume as during the entire season, limited only by the available cars. The car situation shows continued improvement, in response to the efforts of railroads and state and Federal authorities to give the mines better service. It is felt among operators that not much further improvement can be looked for, however, with the coming demands of army movements and the crop shipments, and they are doing their best to utilize the present fair car supply to the utmost advantage. The receipt of river coal in Cincinnati during the past week, brought down on an artificial rise, aroused much interest.

LOUISVILLE

Tied up by the strike or with production reduced by too-prosperous, idling miners, the Kentucky trade is awaiting Federal intervention.

The strike in the eastern Kentucky-Tennessee field has tied things up completely. Any accumulated stocks were immediately disposed of and no more are being produced. Sales agencies are accepting numerous orders conditionally on resumption of operations, at Government prices. There is much confiscation of coal by the railroads and there has been an increase in the inquiries of producers in the eastern and northeastern Kentucky field.

Western Kentucky has not handled much new business, although inquiries have largely increased and much good business has been declined. Since calling off of the strike in the five counties affected, production has lagged, partly on account of poor car supplies and partly because the miners have shown an indisposition to continued efforts. Prices show little change, although the market is very firm and all demands insistent. Lump is quoted at \$2.75@3 and all other sizes at \$2.50@2.75. Some sales at lower prices are said to have been made but cheap coal is difficult to find. All prices are f.o.b. the mines. What amounts to a very tense situation is evidenced in this market and developments must come soon.

BIRMINGHAM, ALA.

Steam trade shows increased activity, due in a measure to anticipated strike. Supply short and quotations firm. Equipment more plentiful than last report, but production showed a further decline, many miners failing to work the last two days of the week.

The local market experienced a more active demand for coal last week than in some time previous, steam users calling for considerable tonnage, the stiffened inquiry being attributable to some extent to the threatened strike of the miners, but in a large measure to the actual need for fuel by consumers who have been restricting their requirements as much as possible for several weeks. Several railroads bought as liberally in the spot market as the supply would permit, paying the maximum prices for the respective grades, and in some instances brokerage in addition. Quota-

tions are very stable at the maximum figures of \$3.75@4 per net ton mines for Black Creek and Cahaba; \$3.50 for Pratt; \$3.25@3.50 for Corona and Carbon Hill, and \$3 for Big Seam and like grades.

The car supply has been more liberal than a week ago, and production did not suffer to any great extent on this account, but was affected considerably by the unrest in labor circles, a large number of miners in the district bringing their tools out of the mines on Friday on account of the strike order set for the 20th. However, many of these men were not members of the union, but were the subjects of intimidations and threats made by union agitators.

Coke

CONNELLSVILLE

Improved car supplies. Spot market steadily declining. Cost sheets nearly completed. Government price fixing expected shortly.

Car supplies last week showed a slight further improvement. Operators apparently expect still better supplies on an average this week as they are offering coke for delivery over the week rather than merely for spot shipment. The spot furnace coke market had an extra bulge the last two days of last week, there being many sales of coke in Pennsylvania cars, for shipment east, at \$15.50 and perhaps at a shade higher. The B. & O. has canceled its rule that its cars must not go off its own tracks, and this gives Eastern consumers two roads to draw from again. This probably contributed to the softening which set in Monday of this week, though the softening was helped by the withdrawal of a few buyers and the offerings seem to be a trifle heavier in addition. The top price paid this week is \$14.50, while as low as \$13 has been done on coke in P. & L. E. cars and in one case this was done on coke in Pennsylvania equipment. The spot market is quotable at \$13@14.50 for furnace coke and at \$14@15 for spot foundry, per net ton at ovens.

Cost sheets for the Federal Trade Commission are being completed this week and are showing an average under \$4, although a few operations, particularly such as will be worked out shortly and therefore have high depreciation charges, are running a trifle over \$4. The Government is expected to fix coke prices, though not as soon as it acts on coal prices. It is doubtful whether the coke price will be much above \$5, and it may be lower than that.

The "Courier" reports production in the Connelleville and lower Conneautville region in the week ended Aug. 11 at 341,953 tons, an increase of 6880 tons, and shipments at 352,060 tons, an increase of 28,114 tons.

Buffalo—The sudden scarcity of 48-hr. furnace has put the price up about to a par with foundry, which is quoted f.o.b. here at \$16.25, with furnace \$16 and stock \$12. Members of the trade say they do not expect these prices to hold, for the Government will no doubt take them up this week and that will be an end of the exorbitant charges for coke.

Birmingham, Ala.—The demand for coke continues stiff, but prices have shown no further increase. Spot foundry is bringing \$16@16.50, contract \$11.50 to \$14.50, and furnace coke \$6 to \$8 all per net ton ovens.

The maximum production is being maintained consistent with labor conditions which exist in the coal mining industry, but the output does not permit of taking on much additional business.

The new byproduct ovens of the Woodward Iron Company will be ready for operation in the near future, as will the 300 bee-hive ovens being rehabilitated by the Birmingham-Trussville Iron Co., at Trussville. It is announced that work has also begun repairing the 400 old-style ovens of the Sheffield Coal & Iron Co., at Jasper, Ala. However, all of this anticipated increase in production is for furnace consumption by stacks which will be placed in operation by the respective companies and will not be available for the outside trade.

Middle Western

GENERAL REVIEW

Serious shortage of coal expected in the Northwest, and other Mid-west sections. Mine strikes in Illinois and Kentucky adding to the Gravity of the Situation.

Developments of the past week show that the Northwest, and other sections of the Mid-west territory are dangerously short of coal. With only six weeks left until frost, coal shippers are much con-

cerned in regard to the outlook and are unanimous in the opinion that the country faces a shortage and that we are on the eve of a fuel famine the like of which has never been experienced here.

Many mines in the State of Illinois are idle on account of strikes, the estimate being at least 20,000 men are not working. The drivers in the central Illinois district have gone on strike for an increase in pay. Officials of the union have ordered the men to return to work, but they are defiant and so far have refused to respond. The operators' and miners' officials express the gravest doubts about the future and fear the strike will spread throughout Illinois and into the state of Indiana.

Before the strike occurred coal shippers and others in touch with the situation knew it was going to be almost impossible to supply the demand this fall and winter. Confronted by a shortage of coal at destination and an unrelieved shortage of railway equipment with which to get the coal to market, it was very doubtful whether the united efforts of the operators and railroads would be able to cope with the situation even should the miners remain at work.

The investigation and the attempt to lower prices by the Illinois State Defense Council has had its influence on certain members of the miners' union. The State Council put before the miners of Illinois misleading and untruthful statements relative to the profits of the operators, and the committee on law and legislation, of which Levy Mayer is chairman, issued practically an invitation to the miners to ask for what they wanted. The statement follows: "If the state operates the coal mines during the war, a scale of prices for the coal mined can be established by the state and changed from time to time to meet varying conditions." The existing wage scale can, if conditions require, be increased by the state. "The coal can be sold at such price above the cost of production, as will, after allowing all proper charges and deductions, leave a fair and reasonable margin of profit which will be such compensation as the court of claims may allow the operators." The striking day laborers are contending for increases varying from 45c. per day up to \$1, and a few of the radicals insisting upon a \$5 per day minimum.

Prices have been very firm the past week, and all grades, even the cheaper fuels, have been commanding the maximum Government prices. This is due more or less to the loss of tonnage on account of the suspension at various Illinois mines and also to shortage of cars and labor.

There has been some improvement on movement of Lake coal. All Western ports report heavy arrivals compared with the past few weeks. However, the shortage of anthracite continues to cause alarm, and dock shippers are asking permission to substitute other coal, especially to territory where the shortage is already acute.

CHICAGO

Railroad embargoes preventing Eastern shipments. Indiana and Illinois mines over-sold. Prices firm and demand in excess of possible supply.

Various Eastern railroads have placed embargoes and restrictions on the movement of coal to Chicago and the territory adjacent, consequently very little, if any, West Virginia, Ohio and Kentucky coals are reaching this market. This naturally has created a heavy demand on the Indiana and Illinois mines, and as quite a number of mines in Illinois are idle account of strikes, the gravity of the situation can well be imagined.

Railroads operating in the Northwest have been able to place some large orders for Southern Illinois at prices ranging from \$2.40 to \$2.75, mine-run basis, providing they furnish the equipment. Heretofore the supply came from the docks.

Lake shipments to Chicago were somewhat heavier than during the few previous weeks, the total aggregating about 25,000 tons anthracite. Rail shipments have been light and far from satisfying current demands.

The Franklin County mines produced about 250,000 tons of coal the past week, and worked about 65% of full time. Two mines, operated by two different companies were idle three days on account of a strike. The demand has been keen, and shippers are being asked to assist to make good the shortage of Pocahontas, anthracite and other Eastern coals. There has been no change in price and maximum prices rule. The Williamson County, as well as Saline County mines are about in the same condition as Franklin County. The suspension in the Springfield district has caused a heavier demand on the field to the south, and car shortage and labor difficulties has not helped much to take care of the regular trade.

The new tariff of the Tidewater railroads was scheduled to go in effect on Aug. 20. This tariff provides for six days straight time or three days average time.

The local dealers in anthracite are unable to secure this grade in any quantity, and stocks on hand are low. The price is \$9 per ton for cash, and \$9.50 per ton on the basis of 60 days.

Dumpings at the Hampton Roads piers for the past several weeks were as follows:

	July 28	Aug. 4	Aug. 11	Aug. 18
Nor. & West...	144,743	121,170	115,925	178,071
Ches. & Ohio...	104,865	81,188		116,595
Virginian.....	84,236	108,117	96,132
Total.....	333,844	390,798

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Bituminous—Just what the outcome of the present policy of holding back buying will be, it is difficult to predict, though local jobbers assert there is great danger that those who delay may find themselves unable to get coal when they decide to come into the market. In this connection attention is directed to the fact that 30,000 freight cars were employed full time in July, handling traffic created by the establishment of army training cantonments. With other demands for freight cars growing as the crop harvesting season advances, the dilatory coal buyers, according to the jobbers, incur the risk that they will be unable to obtain delivery of coal, when they come to the buying point. In the domestic trade consumers are displaying the indifference that comes with summer weather and distribution is proceeding more slowly than in April. While some of the retail dealers

have fair amounts of stock, others are not in a situation to proceed far with the filling of orders when the fall rush of buyers sets in.

Anthracite—One of the most recent developments in the anthracite trade is the entrance of Gov. A. E. Sleeper. At a conference in Lansing, Mich., a few days ago, Governor Sleeper named a special committee of which Henry McMorran, of Port Huron, is chairman, to look into the reason for the small movement of coal, which the governor's figures show is only about 6 per cent. of the state's normal requirements. The movement of anthracite to Detroit is light and retail dealers show no haste to put in larger stocks.

Lake Trade—Shipments from the mines to Lake loading docks show a substantial gain in volume, though the figures fall short of estimates of the amount necessary to supply the Northwest. Vessel tonnage available for loading coal exceeds the number of cargoes at hand. On coal loaded for the head of the Lakes, shippers are quite generally paying a rate of 50c. a ton.

TOLEDO

The demand for Lake tonnage continues strong. Market conditions in general good. Sudden cool weather stimulates domestic buying.

The time of waiting appears to be over according to wholesalers, and buying of all grades and sizes of coal is much more active than it has been in the past month. All buyers seem to feel the lowest prices have been reached and are making strong efforts to get a supply of coal for the coming winter.

The steam trade has been doing the heaviest buying during the week and all indications point to a continuance of this for some time to come. None of the large factories and institutions have anywhere near a normal supply of coal on hand, and as it approaches time to move crops and other supplies for the successful prosecution of the war the shortage of transportation facilities is becoming more and more evident. A large local concern has just finished constructing an enormous pit for the storage of steam coal and is now looking to find someone who will agree to stock it.

Many dealers about the city are placing orders for the stocking of their yards, and buying in this branch of the business has become very active. Stocks of anthracite and Pocahontas are scarce in this section, and most of the small dealers have been caught without a pound of hard coal in their bins. Dealers are pointing out to the people that instead of a reduction in the price of anthracite, the mine price has advanced, and all things indicate another advance in August and September. They are also advising their customers of a possible congested demand this fall and assuring them that this demand cannot be satisfied by either newspaper clamor or unnatural legislation.

The vessel movement is good and the docks at this point are all busy. Lake shippers are employing every means in their power to insure a large tonnage at the head of the Lakes at the close of navigation. Vessels which heretofore had been leaving this port without a cargo for the North are now coal carriers.

Prices on tons, f.o.b. mines, are as follows:

	Mine run	Lump and Egg	Net and Slack
Hocking & Pomeroy.....	\$3.25	\$3.75	\$3.25
West Virginia Splint.....	3.25	3.75	3.25
Kentucky.....	3.25	3.75	3.25
Pocahontas.....	3.25	3.75	3.25

COLUMBUS

The coal trade is awaiting final action on price fixing and there is little domestic buying. Steam business is fairly active and Lake shipments are unusually large.

Lake shippers are straining every nerve to supply the Northwest with fuel before the close of navigation. Lake vessels are being run efficiently as little time is wasted in loading and unloading. Reports from the upper Lake region shows that there is no congestion as the coal is being moved from the docks promptly. Lake prices continue strong in every respect.

The steam trade is fairly active. Larger consumers have been trying to accumulate a surplus and some have succeeded in securing some excess stocks. The smaller user generally has been content to buy as needed, although there is now a feeling of uncertainty of future car supply and buying for the future is more common than formerly. Manufacturing is still active, especially in iron and steel circles. Other lines of manufacturing also have large fuel requirements to be met.

Domestic trade is almost at a standstill, due to uncertainty as to price. Retailers have some stocks of high price coal, which they are unable to sell at a profit. They are loath to stock up until price matters are definitely settled. Consumers are waiting to see what will happen and consequently only about 25 per cent. of coal has been stocked, compared with the same time in previous years. There is a fairly good demand for Pocahontas under the circumstances and stocks are rather scarce. Anthracite is in good demand and prices rule high. In fact there is a considerable range in retail prices. Hocking lump is selling from \$5.50 to \$6 and West Virginia splints from \$6 to \$6.50.

Production has been rather good during the past week. Car supply in the Hocking Valley and Pomeroy Bend fields has been about 80 per cent. of normal. In eastern Ohio the output has been curtailed by small car supply until it has been about 65 per cent. of normal.

Prices on short tons f.o.b. mines are as follows:

	Hocking	Pomeroy	Eastern Ohio
Rescreened lump.....	\$3.50	\$3.50	
Inch and a quarter.....	3.50	3.50	\$3.50
Three-quarter inch.....	3.00	3.00	3.00
Nut.....	3.00	3.00	3.00
Egg.....	3.00	3.00	
Mine run.....	3.00	3.00	3.00
Nut, pea and slack.....	3.00	3.00	3.00
Coarse slack.....	3.00	3.00	3.00

CINCINNATI

Strength continues in the market. Impression growing that lower prices will not be made and that coal will be hard to get. Car supply is better.

Steam demand continues at a heavy rate, while shipments to Lake ports are in the same large volume as during the entire season, limited only by the available cars. The car situation shows continued improvement, in response to the efforts of railroads and state and Federal authorities to give the mines better service. It is felt among operators that not much further improvement can be looked for, however, with the coming demands of army movements and the crop shipments, and they are doing their best to utilize the present fair car supply to the utmost advantage. The receipt of river coal in Cincinnati during the past week, brought down on an artificial rise, aroused much interest.

LOUISVILLE

Tied up by the strike or with production reduced by too-prosperous, idling miners, the Kentucky trade is awaiting Federal intervention.

The strike in the eastern Kentucky-Tennessee field has tied things up completely. Any accumulative stocks were immediately disposed of and no more are being produced. Sales agencies are accepting numerous orders conditionally on resumption of operations, at Government prices. There is much confiscation of coal by the railroads and there has been an increase in the inquiries of producers in the eastern and northeastern Kentucky field.

Western Kentucky has not handled much new business, although inquiries have largely increased and much good business has been declined. Since calling off of the strike in the five counties affected, production has lagged, partly on account of poor car supplies and partly because the miners have shown an indisposition to continued efforts. Prices show little change, although the market is very firm and all demands insistent. Lump is quoted at \$2.75@3 and all other sizes at \$2.50@2.75. Some sales at lower prices are said to have been made but cheap coal is difficult to find. All prices are f.o.b. the mines. What amounts to a very tense situation is evidenced in this market and developments must come soon.

BIRMINGHAM, ALA.

Steam trade shows increased activity, due in a measure to anticipated strike. Supply short and quotations firm. Equipment more plentiful than last report, but production showed a further decline, many miners failing to work the last two days of the week.

The local market experienced a more active demand for coal last week than in some time previous, steam users calling for considerable tonnage, the stiffened inquiry being attributable to some extent to the threatened strike of the miners, but in a large measure to the actual need for fuel by consumers who have been restricting their requirements as much as possible for several weeks. Several railroads bought as liberally in the spot market as the supply would permit, paying the maximum prices for the respective grades, and in some instances brokerage in addition. Quota-

tions are very stable at the maximum figures of \$3.75@4 per net ton mines for Black Creek and Cahaba; \$3.50 for Pratt; \$3.25@3.50 for Corona and Carbon Hill, and \$3 for Big Seam and like grades.

The car supply has been more liberal than a week ago, and production did not suffer to any great extent on this account, but was affected considerably by the unrest in labor circles, a large number of miners in the district bringing their tools out of the mines on Friday on account of the strike order set for the 20th. However, many of these men were not members of the union, but were the subjects of intimidations and threats made by union agitators.

Coke

CONNELLSVILLE

Improved car supplies. Spot market steadily declining. Cost sheets nearly completed. Government price fixing expected shortly.

Car supplies last week showed a slight further improvement. Operators apparently expect still better supplies on an average this week as they are offering coke for delivery over the week rather than merely for spot shipment. The spot furnace coke market had an extra bulge the last two days of last week, there being many sales of coke in Pennsylvania cars, for shipment east, at \$15.50 and perhaps at a shade higher. The B. & O. has canceled its rule that its cars must not go off its own tracks, and this gives Eastern consumers two roads to draw from again. This probably contributed to the softening which set in Monday of this week, though the softening was helped by the withdrawal of a few buyers and the offerings seem to be a trifle heavier in addition. The top price paid this week is \$14.50, while as low as \$13 has been done on coke in P. & L. E. cars and in one case this was done on coke in Pennsylvania equipment. The spot market is quotable at \$13@14.50 for furnace coke and at \$14@15 for spot foundry, per net ton at ovens.

Cost sheets for the Federal Trade Commission are being completed this week and are showing an average under \$4, although a few operations, particularly such as will be worked out shortly and therefore have high depreciation charges, are running a trifle over \$4. The Government is expected to fix coke prices, though not as soon as it acts on coal prices. It is doubtful whether the coke price will be much above \$5, and it may be lower than that.

The "Courier" reports production in the Connelleville and lower Connelleville region in the week ended Aug. 11 at 341,953 tons, an increase of 6880 tons, and shipments at 352,060 tons, an increase of 28,114 tons.

Buffalo.—The sudden scarcity of 48-hr. furnace has put the price up about to a par with foundry, which is quoted f.o.b. here at \$16.25, with furnace \$16 and stock \$12. Members of the trade say they do not expect these prices to hold, for the Government will no doubt take them up this week and that will be an end of the exorbitant charges for coke.

Birmingham, Ala.—The demand for coke continues stiff, but prices have shown no further increase. Spot foundry is bringing \$16@16.50, contract \$11.50 to \$14.50, and furnace coke \$6 to \$8 all per net ton ovens.

The maximum production is being maintained consistent with labor conditions which exist in the coal mining industry, but the output does not permit of taking on much additional business.

The new byproduct ovens of the Woodward Iron Company will be ready for operation in the near future, as will the 300 bee-hive ovens being rehabilitated by the Birmingham-Trussville Iron Co., at Trussville. It is announced that work has also begun repairing the 400 old-style ovens of the Sheffield Coal & Iron Co., at Jasper, Ala. However, all of this anticipated increase in production is for furnace consumption by stacks which will be placed in operation by the respective companies and will not be available for the outside trade.

Middle Western

GENERAL REVIEW

Serious shortage of coal expected in the Northwest, and other Mid-west sections. Mine Strikes in Illinois and Kentucky adding to the Gravity of the Situation.

Developments of the past week show that the Northwest, and other sections of the Mid-west territory are dangerously short of coal. With only six weeks left until frost, coal shippers are much con-

cerned in regard to the outlook and are unanimous in the opinion that the country faces a shortage and that we are on the eve of a fuel famine the like of which has never been experienced here.

Many mines in the State of Illinois are idle on account of strikes, the estimate being at least 20,000 men are not working. The drivers in the central Illinois district have gone on strike for an increase in pay. Officials of the union have ordered the men to return to work, but they are defiant and so far have refused to respond. The operators' and miners' officials express the gravest doubts about the future and fear the strike will spread throughout Illinois and into the state of Indiana.

Before the strike occurred coal shippers and others in touch with the situation knew it was going to be almost impossible to supply the demand this fall and winter. Confronted by a shortage of coal at destination and an unrelieved shortage of railway equipment with which to get the coal to market, it was very doubtful whether the united efforts of the operators and railroads would be able to cope with the situation even should the miners remain at work.

The investigation and the attempt to lower prices by the Illinois State Defense Council has had its influence on certain members of the miners' union. The State Council put before the miners of Illinois misleading and untruthful statements relative to the profits of the operators, and the committee on law and legislation, of which Levy Mayer is chairman, issued practically an invitation to the miners to ask for what they wanted. The statement follows: "If the state operates the coal mines during the war, a scale of prices for the coal mined can be established by the state and changed from time to time to meet varying conditions." The existing wage scale can, if conditions require, be increased by the state. "The coal can be sold at such price above the cost of production, as will, after allowing all proper charges and deductions, leave a fair and reasonable margin of profit which will be such compensation as the court of claims may allow the operators." The striking day laborers are contending for increases varying from 45c per day up to \$1, and a few of the radicals insisting upon a \$5 per day minimum.

Prices have been very firm the past week, and all grades, even the cheaper fuels, have been commanding the maximum Government prices. This is due more or less to the loss of tonnage on account of the suspension at various Illinois mines and also to shortage of cars and labor.

There has been some improvement on movement of Lake coal. All Western ports report heavy arrivals compared with the past few weeks. However, the shortage of anthracite continues to cause alarm, and dock shippers are asking permission to substitute other coal, especially to territory where the shortage is already acute.

CHICAGO

Railroad embargoes preventing Eastern shipments. Indiana and Illinois mines over-sold. Prices firm and demand in excess of possible supply.

Various Eastern railroads have placed embargoes and restrictions on the movement of coal to Chicago and the territory adjacent, consequently very little, if any, West Virginia, Ohio and Kentucky coals are reaching this market. This naturally has created a heavy demand on the Indiana and Illinois mines, and as quite a number of mines in Illinois are idle account of strikes, the gravity of the situation can well be imagined.

Railroads operating in the Northwest have been able to place some large orders for Southern Illinois at prices ranging from \$2.40 to \$2.75, mine-run basis, providing they furnish the equipment. Heretofore the supply came from the docks.

Lake shipments to Chicago were somewhat heavier than during the few previous weeks, the total aggregating about 25,000 tons anthracite. Rail shipments have been light and far from satisfying current demands.

The Franklin County mines produced about 250,000 tons of coal the past week, and worked about 65% of full time. Two mines, operated by two different companies were idle three days on account of a strike. The demand has been keen, and shippers are being asked to assist to make good the shortage of Pocahontas, anthracite and other Eastern coals. There has been no change in price and maximum prices rule. The Williamson County, as well as Saline County mines are about in the same condition as Franklin County. The suspension in the Springfield district has caused a heavier demand on the field to the south, and car shortage and labor difficulties has not helped much to take care of the regular trade.

The Indiana field has had a 60% car supply. Demand has been unusually heavy with the Government maximum prices ruling. Governor Goodrich has called a special session of the Indiana legislature to meet Aug. 28 or 29, to deal with the coal question. His coal regulation bill which has been completed, is briefly as follows:

"The organization of a state commission to control the mines. The levying of a small tax to bear the expense of the commission. Each operator must take out a license before he can produce coal, and if he violates the license his privilege to transact business shall be revoked. The operators must furnish Indiana consumers before selling outside the state. The commission can tax the operators so high they can't afford to produce coal for consumers outside Indiana. The bill also gives the commission power over the retail dealers." In addition to this bill one has been prepared to give the utilities commission absolute authority over the railroads in distribution of cars. The Governor says he believes that \$2.50 per ton is a fair price for domestic sizes, and that \$2 is a fair price for steam coals.

Eastern Kentucky shipments to Chicago and adjacent territory have been nil. Railroad embargoes and car restrictions, also a general strike in the Southeast field, is preventing any of this coal from reaching the Central West.

There has been but little Pocahontas received by Chicago retailers during the past week. Dealers have already served notice on apartment owners that arrangements should now be made to use some other coal, and the probabilities are that the better grades of Illinois and Indiana coal will be used for this purpose.

Prices per ton of 2000 lb., f.o.b. mines, are as follows:

	Springfield	Fulton and Peoria Cos.	Clinton and Sullivan Cos.	Green and Knox Cos.	Carterville
Domestic lump.....	\$3.50	\$3.50	\$3.25@3.50	\$3.00@3.25	\$3.50
Steam lump.....	3.00@3.25	3.00@3.25	3.00@3.25	3.00	3.25@3.50
Egg.....	3.50	3.50	3.50	3.00@3.25	3.50
Nut.....	3.50	3.50	3.50	3.00@3.25	3.50
Mine-run.....	2.50@2.75	2.75	2.75	2.75	2.75
Screenings.....	2.50@2.75	2.50@2.75	2.75	2.75	2.75
	Williamson and Franklin Cos.	Saline and Harrisburg	Poca. and W. Va. Smokeless	Penna. Smokeless	Eastern Kentucky
Lump.....	\$3.50	\$3.50	\$3.75	\$3.75	\$3.75
Egg.....	3.50	3.50	3.75	3.75	3.75
Nut.....	3.50	3.50	3.75	.....	.....
No. 1 nut.....	3.50	3.50	.....	.....	.....
No. 2 nut.....	3.50	3.50	.....	.....	.....
No. 3 nut.....	3.25@3.50	3.25@3.50	.....	.....	.....
No. 1 washed.....	3.50	.....	.....	.....	.....
No. 2 washed.....	3.50	.....	.....	.....	.....
Mine-run.....	2.75	2.75	3.25	3.25	3.25
Screenings.....	2.75	2.75	3.25	3.25	3.25
Hocking Lump \$3.50@3.75		Splint Lump \$3.50@3.75			

KANSAS CITY

Coal for domestic consumption is moving more briskly in Kansas City, but is far yet from the status where operators feel that consumers will be safe. The price on Arkansas anthracite advanced shortly after the first of the month, the retail figure now generally being \$10.75. The advance was 75c., although the freight increase of 15c. and the mine increase of 65c., had made a total of 80c. Arkansas semi-anthracite had had an increase in retail price in July, some dealers selling at \$8.25 and others at \$8.50; practically all sell now at \$8.50, absorbing the freight increase of 15c. Kansas coal is still selling retail at \$6.50 and Missouri at \$5.50.

ST. LOUIS

Steam grades of Standard coal at premium prices, with very little to offer on account of strike. Domestic demand easy on all grades. Williamson and Franklin County lagging except on steam sizes. Situation uncertain. Car supply fair. No Eastern fuels.

Owing to the strike in the Springfield and Standard districts, in which over fifty mines are idle, there has been a premium market on steam sizes this week. Standard lump jumped from \$2.15 and \$2.25 to \$3.25, and screenings from \$1.85 and \$2 to \$2.25 and \$2.50; in some instances \$2.75 was asked and one or two operators even went so far as to ask \$2.85, which was higher than the price they agreed on a couple of months ago for steam sizes. Even with these prices very little coal was obtainable, but enough is coming in from the few mines that are working to take care of the steam demand.

The entire Mt. Olive field is down and that coal is off the market entirely. Public opinion here is with the miners, even though they have a contract not to strike. The press in this section have so thoroughly aired the coal situation to the discomfort

of the operators that the shipping interests have no sympathy in any troubles that may engulf them. Unless the men get some concessions it is likely the labor troubles will involve the entire southern section of the state.

The miners contend they are working two days a week in the mines when they can go out into other lines of industry and get work for six days a week at better wages than the mines pay. A further contention is that clerical labor around the mines have not had their wages increased, and the operators are charging the public for an increase that had never existed. The miners want government control over the mines, but the Illinois operators in the southern section at least do not want it, despite their statements to the contrary.

In the high-grade Williamson and Franklin County field, there is a surplus of domestic sizes. Until this week steam sizes were also lagging, but they have picked up and the prices on steam sizes have improved also. Buying throughout the country is exceedingly slow on this coal, especially in the South, and in St. Louis the dealers are advising their trade not to purchase it, as the price is unreasonable. This is further agitated by the proceedings of the coal hearing going on here in which certain exposures are made as to the alleged price-making by the operators' associations.

In a general way the Illinois situation is unsatisfactory, and it is impossible to form an opinion as to what may happen. It seems certain, and that there is going to be a coal famine in the St. Louis territory in the next 60 days if the public do not begin to buy coal at once, but the public here believe that the Government is going to take over the mines, and if not, the Government of different states will be forced to do so by the public. The laws of Missouri are extremely drastic, and have been

Investigation and Suspension Docket No. 1035. Coal to Muscatine, Iowa. Submitted May 7, 1917. Decided July 17, 1917.

Proposed cancellation of joint rates on coal from mines in Illinois to Muscatine, Iowa, found not justified, and suspended schedules required to be canceled.

No. 7760. Detroit Coal Co. vs. Michigan Central Railroad. Submitted Nov. 11, 1916. Decided July 6, 1917.

The findings and conclusions in The Detroit Reconsigning Case, 25 I. C. C., 392, 37 I. C. C., 274, namely, that the assessment of a \$2 charge for reconsigning coal at Detroit, under the circumstances therein explained, was not unreasonable or otherwise unlawful, reaffirmed.

General Statistics

CARLOAD SHIPMENTS

The following statement of carloads of bituminous coal that originated on 90 railroads and of beehive coke on 18 roads in July, 1917, is compiled from reports received by noon, Aug. 15, 1917:

	July, 1917	June, 1917	July, 1916
Number of working days.....	25	26	25
Central Penn., Md., and New River and Pocahontas fields and Va. (11 roads).....	174,541	181,040	169,151
Western Penn., Ohio, and Mich. (14 roads).....	110,733	113,062	102,267
Eastern Ky. and W. Va. (except New River and Pocahontas fields), (11 roads).....	182,474	178,177	168,125
Ala., Tenn., and Ga. (5 roads).....	22,962	23,072	18,939
Ill., Ind., and Western Ky. (22 roads).....	178,615	179,776	96,941
Ark., Iowa, Kan., Mo., Okla., and Tex. (10 roads).....	46,661	49,915	38,543
Rocky Mountain States, N. D., and Wash. (12 roads).....	48,979	56,492	41,278
85 roads.....	764,965	781,534	635,244
Beehive coke (16 roads).....	83,349	83,058	74,799

There was a decrease in the shipments of bituminous coal on these roads in July, 1917, compared with June, 1917, of 16,569 cars, or 2.1 per cent., but an increase compared with July, 1916, of 129,721 cars, or 20.4 per cent. There were, however, but 25 working days in July, 1917, and 26 working days in June, 1917. The average loading in July was 30,599 cars, compared with 30,059 in June. The increase in average daily loading, which is the true index of the rate of production, was 540 cars, or 1.8 per cent., in July, 1917, over June, 1917. The number of working days in July, 1916, was the same as in July, 1917, and the total of cars loaded in these months therefore gives a direct comparison.

BALTIMORE & OHIO R.R.

The following coal and coke tonnage was moved over the Baltimore & Ohio R.R. and affiliated lines during the months of May and April, 1916-17:

	May		June	
	1917	1916	1917	1916
Coal.....	3,004,664	2,967,082	3,093,001	2,934,937
Coke.....	293,454	357,106	311,210	352,092
Total....	3,298,118	3,324,188	3,404,211	3,287,029

Foreign News

GREAT BRITAIN

July 26—The market is exceedingly dull. It would probably not be an exaggeration to say that the condition approaches paralysis, entirely owing to the lack of shipping facilities.

Fixed regulation prices are as follows:

Best Welsh steam.....	\$7.92
Best seconds.....	7.56
Seconds.....	7.38
Best dry coals.....	7.20
Best Monmouthshires.....	7.20
Seconds.....	6.96
Best Cardiff smalls.....	5.52
Cargo smalls.....	4.80

Freights—Demand is active, but business is quiet owing to the lack of tonnage.

Gibraltar.....	\$21.60	Port Said.....	\$34.80
Marseilles.....	21.54	Las Palmas.....	18.00
Genoa.....	24.30	St. Vincent.....	19.20
Naples.....	23.58	River Plate.....	27.00
Alexandria.....	40.80		

I. C. C. Decisions

No. 9227. J. C. Rawson, vs. Cleveland, Cincinnati, Chicago & St. Louis Ry. Submitted Jan. 18, 1917. Decided June 6, 1917.

Carload of bituminous lump coal from Harrisburg, Ill., to Milbank, S. Dak., found to have been misrouted. Reparation awarded.